

Framework
for Implementing
**Green
Growth**
in Bangladesh - 2023

*From a Shared
Vision to Action*

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Strengthen environmental governance and accounting systems



Policy Direction 2
Enable energy independence through energy efficiency and renewable energy trade



Policy Direction 3
Promote inclusive connectivity through green transport and logistics systems

Objective 2: Foster new growth engines and skills for green growth



Policy Direction 4
Invest in new green industries and human capital to promote job creation and green innovation



Policy Direction 5
Promote livable green cities through urban regeneration and new smart cities



Policy Direction 6
Stimulate productive agriculture, promote the blue economy, strengthen coastal resilience, and sustainably manage natural capital

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Policy Direction 7
Strengthen social protection and the capacity of citizens to adapt to an inclusive climate-resilient economy



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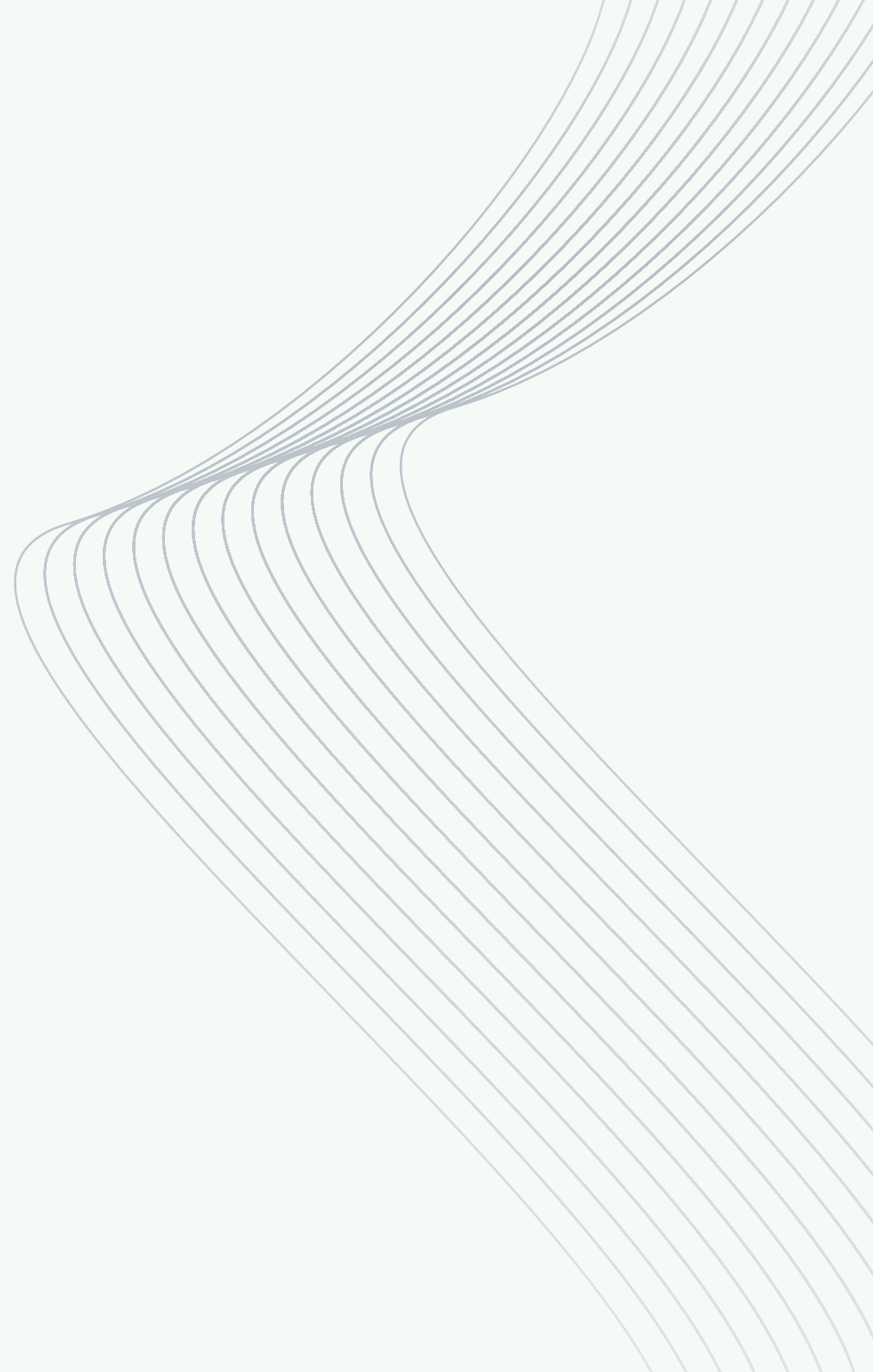
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Preface

This advisory document provides a green-growth framework for Bangladesh to achieve high-level objectives identified in the Bangladesh Country Partnership Framework for fiscal years 2023–2027, and the country’s goal of reaching high-income country status by 2041. It includes recommendations for coordinated policy and investment prioritization, the establishment of an institutional enabling environment, and financing options for green growth in Bangladesh. These recommendations seek to equip the Bangladesh Planning Commission and the Finance Division to identify, discuss, and prioritize activities and investment proposals received annually from line ministries. The report proposes a whole-of-government approach, utilizing this advisory document as a tool and consultation note as a basis for the 9th Five-Year Plan (FY2025–2030) preparation process.

Green-growth ambitions are embedded in Bangladesh’s national plans, including the 8th Five-Year Plan (FY 2021–2025); Prospective Plan 2021–2041; Delta Plan 2100; the Mujib Climate Prosperity Plan; Nationally Determined Contributions; and National Adaptation Plan. These all reflect the government’s commitment to channel finance into green investments and implement policy reforms for green growth. Hence, green growth serves as a strategic organizing principle for objectives already set out by the Government of Bangladesh. Although it has green growth ambitions, there are significant challenges that deter implementation, including the need for prioritization of public investment and limited coordination between ministries, particularly with regard to planning, budget allocation processes and the alignment with line ministries to achieve national greener and economic targets.

This advisory document addresses key gaps identified through multiple diagnostics carried out by the World Bank and consulted with the Bangladesh Planning Commission and the Finance Division, and supports the Government of Bangladesh's series of policy reforms that focus on green climate-resilient goals. As part of these reforms, the Ministry of Planning has started to integrate green climate-resilient goals into the preparation, processing, approval and revision of public sector projects, and into project investment management. Such actions are supported by the World Bank as part of a series of development policy operations, and this advisory document provides guidelines for implementing green climate-resilient goals. It can serve as a basis for strategically engaging line ministries upstream, helping them understand how green growth can be realized in alignment with the country's economic and sectoral priorities. Its recommendations are intended to guide decision-making processes and build a wider consensus on priority policies, multi-sectoral themes, and action for channeling limited resources to achieve green growth.



Abbreviations

a2i	Aspire to Innovate	BCS	Bangladesh Civil Service
AAP	Ambient Air Pollution	BCSAA	Bangladesh Civil Service Administration Academy
ADB	Asian Development Bank	BDP	Bangladesh Delta Plan
ADP	Annual Development Plan	BE	Blue Economy
AEE	Association of Energy Engineers	BEEER	Building Energy Efficiency and Environment Rating System
AI	Artificial Intelligence	BEPZA	Bangladesh Export Processing Zone Authority
AIIB	Asian Infrastructure Investment Bank	BESF	Bangladesh Environmental Statistics Framework
AOP	Aerosol Optical Depth	BEST	Bangladesh Environmental Sustainability and Transformation Project
APCR	Air Pollution Control Rules	BEZA	Bangladesh Economic Zone Authority
AQM	Air-Quality Management	BFD	Bangladesh Forest Department
ARMA	Auto Regression Moving Average	BFIDC	Bangladesh Forest Industries Development Corporation
ASAP	Adaptation for Smallholder Agriculture Program	BFRI	Bangladesh Forest Research Institute
BADC	Bangladesh Agricultural Development Corporation	BGMEA	Bangladesh Garment Manufacturers and Exporters Association
BAM	Beta Attenuation Monitor	BIDA	Bangladesh Investment Development Authority
BARC	Bangladesh Agricultural Research Council	BIFFL	Bangladesh Infrastructure Finance Fund Limited
BARI	Bangladesh Agriculture Research Institute	BLRI	Bangladesh Livestock Research Institute
BAU	Business as Usual	BMB	Budget Management Branch
BB	Bangladesh Bank	BMC	Budget Management Committee
BBMOA	Bangladesh Brick Manufacturers Owners Association	BMD	Bangladesh Meteorological Department
BBS	Bangladesh Bureau of Statistics	BNBC	Bangladesh National Building Code
BC	Black Carbon	BNH	Bangladesh National Herbarium
BCCT	Bangladesh Climate Change Trust	BoP	Balance of Payments
BCCTF	Bangladesh Climate Change Trust Fund	BPDB	Bangladesh Power Development Board
BCCSAP	Bangladesh Climate Change Strategy and Action Plan	BREEAM	Building Research Establishment Environmental Assessment Method
BCFF	Bangladesh Climate Fiscal Framework		
BCIC	Bangladesh Chemical Industries Corporation		

BRT	Bus Rapid Transport
BRTA	Bangladesh Road Transport Authority
BSCIC	Bangladesh Small and Cottage Industries Corporation
BSEC	Bangladesh Securities and Exchange Commission
BSFC	Bangladesh Sugar and Food Industries Corporation
BSTI	Bangladesh Standards and Testing Institution
BTB	Bangladesh Tourism Board
BUILD	Business Initiative Leading Development
BWDB	Bangladesh Water Development Board
BWG	Budget Working Group
C	Centigrade
CAMS	Continuous Air Monitoring Station
CAP	Country Action Plan for Clean Cookstoves
CASBEE	Comprehensive Assessment System for Built Environment Efficiency
CBU	Completely Built-up Unit
CCDR	Country Climate and Development Report
CDM	Clean Development Mechanism
CEA	Country Environmental Analysis
CEGIS	Centre for Environmental and Geographic Information Services
CER	Certified Emission Reductions
CFF	Climate Fiscal Framework
Cl	Chlorine
CIP	Country Investment Plan
CIP-EFCC	Country Investment Plan for Environment, Forest and Climate Change

CLRTAP	Convention on Long-range Transboundary Air Pollution
CMSMEs	Cottage, Micro, Small and Medium-sized Enterprises
CNG	Compressed Natural Gas
CO₂	Carbon Dioxide
CO₂e	Carbon Dioxide Equivalent
COP	Conference of the Parties
CPS	Country Programme Strategy
CPTU	Central Procurement Technical Unit
CSA	Climate-Smart Agriculture
CSAIP	Climate-Smart Agriculture Investment Plan
CSE	Chittagong Stock Exchange
CSICRD	Climate Smart Integrated Coastal Resources Database
CSO	Civil-Society Organization
CSR	Corporate-Social Responsibility
CVF	Climate Vulnerable Forum
DAE	Department of Agricultural Extension
DALY	Disability-Adjusted Life Year
DAM	Department of Agricultural Marketing
DCCI	Dhaka Chamber of Commerce and Industry
DDM	Department of Disaster Management
DG	Diesel Generator
DLS	Department of Livestock Services
DNA	Designated National Authority
DoE	Department of the Environment
DoF	Department of Fisheries
DPC	Development Policy Credit

DSE	Dhaka Stock Exchange	GCR	Green and Climate Resilient
DSS	Department of Social Services	GCRD	Green and Climate Resilient Development
DTCA	Dhaka Transport Coordination Authority	GDA	Greater Dhaka Area
ECA	Environmental Conservation Act	GDP	Gross Domestic Product
ECR	Environmental Conservation Rules	GED	General Economics Division
EECMP	Energy Efficiency and Conservation Master Plan	GEF	Global Environment Facility
EFCC CIP	Country Investment Plan for Environment, Forestry, and Climate Change	GeoDASH	Geospatial Data Management and Visualization Platform
EFR	Environmental Fiscal Reform	GFVC	Green-Finance Value Chain
EIA	Environmental Impact Assessment	GGGI	Global Green Growth Institute
EMEP	European Monitoring and Evaluation Programme	GHG	Greenhouse Gas
EPI	Environmental Performance Index	GIS	Geographic Information Systems
EPR	Extended Producer Responsibility	GITA	Green-Investment Tax Allowance
EPZ	Export Processing Zone	GLS	Generalized Least Squares
ERD	Economic Relations Division	GNI	Gross National Income
ERM	Environmental Risk Management	GoB	Government of Bangladesh
ESG	Environmental, Social, and Governance	GRI	Global Reporting Initiative
ESP	Environmentally Sustainable Practices	GRID	Green, Resilient, Inclusive Development
ESRM	Enterprise Security Risk Management	GTF	Green Transformation Fund
ETP	Effluent Treatment Plant	GW	Gigawatt (10 ⁹ watts)
FCK	Fixed Chimney Kiln	ha	Hectare
FID	Financial Institutions Division	HAP	Household Air Pollution
FY	Fiscal Year	HC	Hydrocarbon
FYP	Five-Year Plan	HCFC	Hydrochlorofluorocarbon
GAINS	Greenhouse Gas and Air Pollution Interactions and Synergies	HHK	Hybrid Hoffman Kilns
GCA	Global Center on Adaptation	HIC	High-Income Country
GCF	Green Climate Fund	I&M	Inspection and Maintenance
		IAPP	Integrated Agriculture Productivity Project

ICS	Improved Cook Stoves
ICT	Information and Communications Technology
ICTD	Information and Communications Technology Division
IDCOL	Infrastructure Development Company Limited
IDP	Internally Displaced People
IEA	International Energy Agency
IGP	Indo-Gangetic Plain
IGP-HF	Indo-Gangetic Plain and Himalayan Foothills
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
ILO	International Labour Organization
IMF	International Monetary Fund
IORA	Indian Ocean Rim Association
IPO	Intellectual Property Office
IPP	Independent Power Producer
IQ	Intelligence Quotient
ISO	International Organization for Standardization
IT	Information Technology
ITeS	Information Technology enabled Services
IWT	Inland Water Transport
K-eco	Korea Environment Corporation
KEITI	Korea Environmental Industry and Technology Institute
kg	Kilogram
KIAT	Korea Institute for Advancement of Technology
km	Kilometer
km²	Square Kilometer

kWh	Kilowatt Hour
LDC	Least-Developed Country
LDCF	Least Developed Countries Fund
LED	Light-Emitting Diode
LEDS	Long-Term Low-Emission Development Strategy
LEED	Leadership in Energy and Environmental Design
LGBT	Lesbian, Gay, Bisexual, and Transgender
LGD	Local Government Division
LGI	Local Government Institution
LMI	Lower-Middle Income
LMIC	Lower-Middle-Income Country
LNG	Liquified Natural Gas
LoCAL	Local Climate Adaptive Living Facility
LOESS	Locally Estimated Scatterplot Smoothing
LPG	Liquified Petroleum Gas
M	Meter
m³	Cubic Meter
M&G	Monitoring and Evaluation
MBF	Ministry Budget Framework
MCPP	Mujib Climate Prosperity Plan
ME	Microenterprise
µg	Microgram
MoA	Ministry of Agriculture
MoC	Ministry of Commerce
MoCAT	Ministry of Civil Aviation and Tourism
MODIS	Moderate Resolution Imaging Spectroradiometer
MoDMR	Ministry of Disaster Management and Relief
MoE	Ministry of Education

MoEFCC	Ministry of Environment, Forest and Climate Change
MoF	Ministry of Finance
MoFA	Ministry of Foreign Affairs
MoFL	Ministry of Fisheries and Livestock
MoHFW	Ministry of Health and Family Welfare
MoHPW	Ministry of Housing and Public Works
MoI	Ministry of Industries
MoIB	Ministry of Information and Broadcasting
MoLE	Ministry of Labor and Employment
MoLGRDC	Ministry of Local Government, Rural Development and Co-operatives
MoP	Ministry of Planning
MoPA	Ministry of Public Administration
MoPEMR	Ministry of Power, Energy and Mineral Resources
MoS	Ministry of Shipping
MoST	Ministry of Science and Technology
MoSW	Ministry of Social Welfare
MoTIE	Ministry of Trade, Industry and Energy
MoWR	Ministry of Water Resources
MRT	Mass Rapid Transport
MRV	Monitoring, Reporting and Verification
MSMEs	Micro, Small and Medium-sized Enterprises
MSP	Marine Spatial Planning
MSW	Municipal Solid Waste
Mt	Million Tonnes
MTSBP	Medium-Term Strategy and Business Plan
MW	Megawatt (10 ⁶ watts)
Mwh	Megawatt Hours

Na	Sodium
NAMA	Nationally Appropriate Mitigation Action
NAP	National Adaptation Plan
NAPD	National Academy for Planning and Development
NATP-II	National Agriculture Technology Program
NBFI	Non-Bank Financial Institution
NBR	National Board of Revenue
NbS	Nature-based Solution
NBR	National Bureau of Revenue
NCA	National Clean Air Program
NCAPC	National Committee on Air Pollution Control
NCC	Narayanganj City Corporation
NDC	Nationally Determined Contribution
NEP	National Environment Policy
NFP	National Forest Policy
NGO	Non-Governmental Organization
NH₃	Ammonia
NH₄	Ammonium
NILG	National Institute of Local Government
NJLIP	Nuton Jibon Livelihood Improvement Project
nm	Nanometer (10 ⁻⁹ meters)
NMVOC	Non-Methane Volatile Organic Compounds
NO₃	Nitrate
NO_x	Nitrogen Oxides
OC	Organic Carbon
OECD	Organisation for Economic Co-operation and Development
p	Probability

PaCT	Partnership for Cleaner Textile	RTHD	Road Transport and Highways Division
Pb	Lead	SAR	South Asia Region
PEFA	Public Expenditure and Financial Accountability	SCCF	Special Climate Change Fund
PER	Public Expenditure Review	SCD	Systematic Country Diagnostic
PES	Payment for Ecosystem Services	SDG	Sustainable Development Goal
PFM	Public Financial Management	SEP	Sustainable Enterprise Project
PIM	Public Investment Management	SEZ	Special Economic Zone
PKSF	Palli Karma-Sahayak Foundation	SIA	Secondary Inorganic Components
PM_{2.5}	Fine Particulate Matter with a Diameter of 2.5 Micrometers or Less	SFU	Sustainable Finance Units
PMF	Positive Matrix Factorization	SGP	Small Grants Program
PMI	Partnership for Market Implementation	SLCP	Short-Lived Climate Pollutants
PMO	Prime Minister's Office	SME	Small and Medium-Sized Enterprise
PP	Perspective Plan	SO₂	Sulfur Dioxide
ppb	Parts per Billion	SO₄	Sulfate
PPCR	Pilot Program on Climate Resilience	SOA	Secondary Organic Aerosol
PPD	Public-Private Dialogue	SOE	State-Owned Enterprise
PPE	Personal Protective Equipment	SPC	Special-Purpose Corporation
PPP	Public-Private Partnership	SREDA	Saskatoon Regional Economic Development Authority
PPPTAF	Public Private Partnership Technical Assistance Fund	SREDA	Sustainable and Renewable Energy Development Authority
PPSC	Project/Programme Selection Committee	SRO	Statutory Regulatory Order
PV	Photovoltaic	STEM	Science, Technology, Engineering, and Mathematics
QFED	Quick Fire Emissions Dataset	SWTP	Surface-Water Treatment Plant
R&D	Research and Development	TNC18	Third National Communication of Bangladesh
RECP	Resource-Efficient Cleaner Production	TVET	Technical and Vocational Education and Training
RHD	Roads and Highways Department	UIP	Umbrella Investment Program
RISE	Resilience, Inclusion, Sustainability, and Efficiency	UK	United Kingdom
RMG	Ready-Made Garment		

ULAB	Used Lead-Acid Battery
UMIC	Upper-Middle-Income Country
UN	United Nations
UNCDF	United Nations Capital Development Fund
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNOPS	United Nations Office for Project Services
US	United States (of America)
USAID	United States Agency for International Development
US–NOAA	United States National Oceanic and Atmospheric Administration
UTC	Coordinated Universal Time
VAT	Value-Added Tax
VCU	Verified Carbon Units
VGf	Viability Gap Fund
VOC	Volatile Organic Compounds
VSBK	Vertical Shaft Brick Kiln
V20	Vulnerable 20 Countries
WASH	Water, Sanitation and Adequate Hygiene
WBG	World Bank Group
WEP	Waste Eco-Park
WHO	World Health Organization
WRF-Chem	Weather Research and Forecasting Model with Chemistry
WSS	Water Supply and Sanitation

WUA	Water-User Association
3Rs	Reduce, Reuse, and Recycle
4IR	Fourth Industrial Revolution
8th FYP	8th Five-Year Plan



Executive Summary



Bangladesh has made important progress in economic growth and poverty reduction, but much of this progress has come at the cost of high carbon intensity and resource inefficiency, high levels of pollution, reduced climate resilience, and environmental degradation.

Furthermore, the rising energy crisis and the country's high dependency on a limited number of industries pose additional risks to sustainable growth and reaching its goal of becoming a high-income country by 2041.

The Government of Bangladesh has communicated strong ambitions to transition to green growth through several national plans, but it faces challenges in effectively implementing green-growth strategies. National plans with green-growth components include the 8th Five-Year Plan, the 2041 Perspective Plan, and the Bangladesh Delta Plan 2100, and the Mujib Climate Prosperity. The ambitions in national goals provide the foundational steps for policies that support green, sustainable, efficient, inclusive, and resilient development. Bangladesh has multiple environmental laws, regulations, and plans, yet demonstrates weak performance in environmental management. Implementation challenges primarily relate to two issues. First, there is a case for prioritization of public investment within the Annual Development Program, managed by the Ministry of Planning together with line ministries. Second, limited coordination exists between the Annual Development Program formulation process and the annual budget process, managed

by the Ministry of Finance. These shortcomings have resulted in an inefficient public investment management system, with insufficient budgetary allocations to investment projects and a low execution rate. Climate-related allocation currently stands at 7.5 percent of the total budget or 0.8 percent of gross domestic product.


The proposed framework provides a strategic blueprint with three overarching objectives: (a) to facilitate effective environmental governance and an energy transition; (b) to foster new engines and skills for green growth; and (c) to achieve a just transition to a resilient, green, and healthy society. The proposed framework envisions these three objectives being fulfilled through action responsive to nine policy directions: (i) strengthen environmental governance and accounting systems; (ii) enable energy independence through energy efficiency and renewable energy trade; (iii) promote inclusive connectivity through green transport and logistics systems; (iv) invest in new green industries and human capital to promote job creation and green innovation; (v) promote liveable green cities through urban regeneration and new smart cities; (vi) stimulate productive agriculture, promote a blue economy, strengthen coastal resilience, and manage natural capital sustainably; (vii) strengthen social protection and the capacity of citizens to adapt to an inclusive climate-resilient economy; (viii) improve public health and wellbeing through a cleaner environment; and (ix) enhance international engagement and cooperation

on climate change. Policy recommendations, key institutions to be involved, and suggested indicators to track progress are provided under each policy direction.

This document provides a strategic blueprint to strengthen Bangladesh's regulatory framework, institutional arrangements, investments, and knowledge structures to enable the implementation of green growth strategies. Major challenges in governance and institutional arrangements include limited coordination between ministries, departments, local governments, and development partners; funding shortages; inadequate technical skills; and the absence of a quantitative monitoring and evaluation system. The framework will be used to promote coordination between key ministries, including between the Ministry of Planning and Ministry of Finance, as well as line ministries. This document seeks to integrate green growth objectives in the planning and budgeting processes. The framework was developed based on a review of the government's existing plans; sectoral diagnostics carried out by the World Bank; leading research on Bangladesh's economy and climate change landscape; and a series of consultations with representatives of academia, businesses, civil society, government agencies and youth. Urgency and sustainable impact on both growth and welfare were prioritized.

This document discusses prospective green finance vehicles and highlights the opportunities for Bangladesh to effectively channel resources to implement green growth strategies. Structural weaknesses in Bangladesh's banking system and institutional bottlenecks pose some of the biggest challenges to increasing the volume and range of green financing instruments, resulting in green investments being perceived as riskier than non-green ones. At the same time, borrowers face huge hurdles in adopting and financing green practices, resulting in insufficient financial flows and an inadequate pipeline of projects. The analysis suggests that encouraging private investment in climate programs, that also leverage development finance institutions and financial institutions using legal and regulatory policies and establishing public-private partnerships, can boost private financing for environmental initiatives. Accessing international climate funds and the availability of concessional finance may provide the necessary incentives or risk mitigation (variability, portfolio risks, etc.) for the private sector development finance institutions to invest.

Summary of Recommendations

 **Table 1** Summary of Key Recommendations under the Proposed Framework for Implementing Green Growth in Bangladesh

Objective 1. Facilitate Effective Environmental Governance and Energy Transition	
<p>Policy Direction</p> <p>1 Strengthen environmental governance and accounting systems</p> <p>Issues addressed</p> <p>Lack of emission- disclosure mechanisms and environmental accounting which are barriers to accessing green finance and adopting green technologies</p> <p>Key government actors</p> <p>MoEFCC, BSEC</p>	<p>Duration</p> <p>Short Term</p> <p>Most important actions</p> <p>Establish emission-disclosure targets and mandatory greenhouse gas reporting; establish a national greenhouse gas emissions inventory system; account for environmental degradation costs in planning and budgetary management; set up credit risk guarantee funds to promote green public and private sector investment and uptake of green technology; pursue sustainable forest management to unlock climate finance and other climate co-benefits.</p>
<p>Policy Direction</p> <p>2 Enable energy independence through energy efficiency and renewable energy trade</p> <p>Issues addressed</p> <p>Power cuts that disrupt key economic sectors; high dependency on natural gas which is susceptible to significant price fluctuations</p> <p>Key government actors</p> <p>SREDA, MOPEMR, BRTA, RHD, DoE, MoEFCC</p>	<p>Duration</p> <p>Long Term</p> <p>Most important actions</p> <p>Introduce fuel-efficiency standards for vehicles; pilot smart gas meters; blend green hydrogen; strengthen supply of energy from renewable sources through investment in utility-scale renewable energy generation (this includes examining available land for renewable energy generation), augmented transmission and distribution infrastructure; pursue cross-border renewable power trade; reform fossil fuel subsidies; implement a green/climate tax to generate revenue for clean energy and environmental programs.</p>
<p>Policy Direction</p> <p>3 Promote inclusive connectivity through green transport and logistics systems</p> <p>Issues addressed</p> <p>Pollution caused by existing transport modalities; lack of green urban spaces; limited connectivity between cities and regions</p> <p>Key government actors</p> <p>City Corporations (Dhaka South, Dhaka North, Chittagong), DTCA, SREDA, MOPEMR, BRTA, RHD</p>	<p>Duration</p> <p>Medium Term</p> <p>Most important actions</p> <p>Invest in urban mass transit systems that are green, accessible, reliable and inclusive; implement green building polices and guidelines; promote use of electronic vehicles (2/3 wheelers) for inclusive green growth; promote pedestrian and bicycle-friendly urban streets.</p>

Objective 2. Foster New Engines and Skills for Green Growth

Policy Direction

4 Invest in new green industries and human capital to promote job creation and green innovation

Duration

Medium Term

Issues addressed

High dependency on low-skilled industries; high dependency of brown industries; missed opportunities in value chain development

Most important actions

Encourage the growth of modern services, particularly in education, ICT, banking and healthcare sectors; retrain and upskill disadvantaged worker groups through appropriate social safety nets; prioritize R&D investment in green technologies which add high value, job creation, and manufacturing-capacity synergies; invest in infrastructure for green clusters; promote the switch of the RMG and other key sectors to resource-efficient production models; devise a variety of policy instruments to promote circular-economy models; support SMEs greening through green partnerships; reduce emissions from agriculture and livestock through efficient technologies and supply chain improvements.

Key government actors

MoLE, MoI, MoF, BB, ICTD, BTB, SREDA, MoPEMR, MoEFCC, BEPZA, BSCIC, BSTI, MoA; MoDMR

Policy Direction

5 Promote liveable green cities through urban regeneration and new smart cities

Duration

Medium Term

Issues addressed

Power cuts that disrupt key economic sectors; high dependency on natural gas which is susceptible to significant price fluctuations

Most important actions

Develop secondary smart cities to reduce the load on Dhaka and Chattogram's environment; invest in city-level diagnostics to identify urban development challenges in governance, transportation, environment, energy, and management of solid waste, water, and disasters; set up the legal foundations for smart-city projects; promote green urban spaces and green housing.

Key government actors

MoST, LGD, ICTD, DCCI

Policy Direction

6 Stimulate productive agriculture; promote the blue economy; strengthen coastal resilience; and manage natural capital sustainably

Duration

Medium Term

Issues addressed

Climate change risks to agricultural productivity; untapped blue economy potential; high vulnerabilities to climate risk in coastal areas; unsustainable management of natural capital; high dependency on natural resources; low capacity to adapt to climate risks, particularly in coastal areas

Most important actions

R&D and investments to scale up climate-smart agriculture (e.g., adaptive cropping, rice-fish farming, pond fishing, low-emission rice production, efficient irrigation systems, salt-tolerant and drought-resistant rice varieties, etc.); increase access to credit and insurance in the agricultural sector; develop systems to measure and monitor blue economy performance through regular public expenditure reviews of key blue economy sectors and the piloting of marine spatial planning (MSP); adopt policies to open up the sector to investments, including foreign direct investment; promote regional coordination for coordinate and joint marine-resources management and enhanced maritime connectivity; introduce ICT-based monitoring of natural capital stocks, including fisheries stocks; involve indigenous communities in conservation efforts; sustainable landscape management through integrated land use planning; investments in value chains and certification; leverage climate-smart agriculture and nature-based solutions; promote ecotourism.

Key government actors

CEGIS, BFD, MoEFCC, DoF, MoFL, MoA, MoPEMR, MoS, MoCAT, BARI, BLRI, DAE, DAM, DLS

Objective 3. Achieve a Just Transition Enabling a Resilient, Green, and Healthy Society

Policy Direction

7 Strengthen social protection and capacity of citizens to adapt to an inclusive climate-resilient economy

Issues addressed

Vulnerabilities to climate change affect economic activities, livelihoods, and quality of life

Key government actors

BMD, CEGIS, MoEFCC, BWDB, MoSW, city corporations and municipalities, Delta Wing; MoDMR

Duration

Medium Term

Most important actions

Enhance disaster preparedness through improved hardware and ICT infrastructure to increase accuracy and lead times of disaster forecasts and strengthened observation network for cyclone monitoring; strengthen the institutional and technical capacities of BMD, and coordination with other key agencies such as BWDB; undertake reforms in city corporations and municipalities for cost recovery in urban water supply; establish effective Water User Associations in rural areas; operationalize the Delta Wing, the Delta fund, and the Delta Knowledge Hub as envisioned in the 8th FYP; integrate gender aspects into social welfare programs and transition towards cash-based programs.

Policy Direction

8 Improve public health and wellbeing through a cleaner environment

Issues addressed

Air pollution and other types of pollution resulting from weak enforcement in standards and regulations and low adoption of clean technologies lead to negative impacts on public health, productivity, and overall wellbeing

Key government actors

DoE, MoEFCC, MoST, MoHFW

Duration

Medium Term

Most important actions

Expand the DoE's regulatory mandate; establish an environment fund to mobilize sustainable financing for conservation actions; publicly disclose key environmental indicators; continue to implement the Dhaka Rivers Ecological Restoration Project to improve water flows and enhance domestic wastewater management; to reduce ambient and household air pollution: (i) eliminate burning of agricultural residue and solid waste; (ii) improve management of agricultural fertilizers and livestock manure; (iii) control emissions from industry and the power sector; (iv) substitute household use of solid fuel for cooking by switching to LPG or electricity; (v) collaborate with neighboring countries to address transnational PM_{2.5} pollution; (vi) further assess the potential for promoting the use of electric stoves for cooking; and (vii) further assess price and non-price obstacles and incentives for adoption of LPG for cooking; to address microbiological pollution: (i) household point-of-use treatment of drinking water with ceramic filter; (ii) safely managed improved non-shared sanitation for households currently having unimproved sanitation; and (iii) promotion of hand washing with soap targeting caregivers of children under five.

Policy Direction

9 Enhance engagement and cooperation with international community on climate change

Issues addressed

Effective climate action requires coordinated efforts and continued engagement with international actors

Key government actors

MoFA, ERD, MoEFCC

Duration

Long Term

Most important actions

Build partnerships with countries for technology transfers, technical assistance programs, and trade deals for green products; actively engage in climate negotiations and make constructive contributions.

Enabling environment for implementing green growth

Key recommendation

Strengthen the regulatory framework for green growth

Issues addressed

Bangladesh has multiple environmental laws, regulations, and plans, yet demonstrates weak performance in environmental management largely due to implementation-capacity constraints and financing problems

Key government actors

MoEFCC

Duration

Medium Term

Most important actions

Explore the enactment of a framework act that sets a legal basis for action addressing climate risks and adopting green growth principles.

Key recommendation

Strengthen the governance and institutional arrangements for green growth

Issues addressed

Low capacity of MoEFCC and DoE to engage line ministries and lack of formalized institutional arrangements for coordinating policy making related to environmental protection; absence of the role of local government institutions in environmental management

Key government actors

MoEFCC, DoE, local government institutions, LGD, MoLGRDC, MoLF MoC, MoI, BEPZA, BEZA, MoF, private sector

Duration

Medium Term

Most important actions

Mandatory reporting of line ministries receiving green-relevant budget allocation on progress towards green growth goals; utilize the framework and advisory committee established to implement the NDCs and National Action Plan for environmental coordination efforts; strengthen the capacity of the MoEFCC, DoE, and relevant line ministries to deliver environmental and climate programs; decentralize environmental management to local institutions.

Key recommendation

Strengthen budgeting and planning processes for green growth

Issues addressed

Misalignment between planning and budgetary processes; weak green budget formulation; limited involvement of state-owned enterprises (SOEs), non-governmental organizations (NGOs), and the private sector

Key government actors

MoP, MoF, SOEs NGOs, private sector

Duration

Short Term

Most important actions

Continue progress on green public financial management in terms of green accounting, procurement, and auditing; strengthen linkages between resource allocation and GoB's green growth goals; promote sustainable public procurement practices in SOEs to facilitate the green transition of SMEs; promote locally led climate and green action programs through the involvement of NGOs and the private sector.

Financing for implementing green growth

Key recommendation

Promote green financing instruments and the adoption of green practices

Issues addressed

Structural weaknesses in the country's banking system and institutional bottlenecks limit progress in increasing the volume and range of green financing instruments, resulting in green investments and taxonomy being perceived as risky

Key government actors

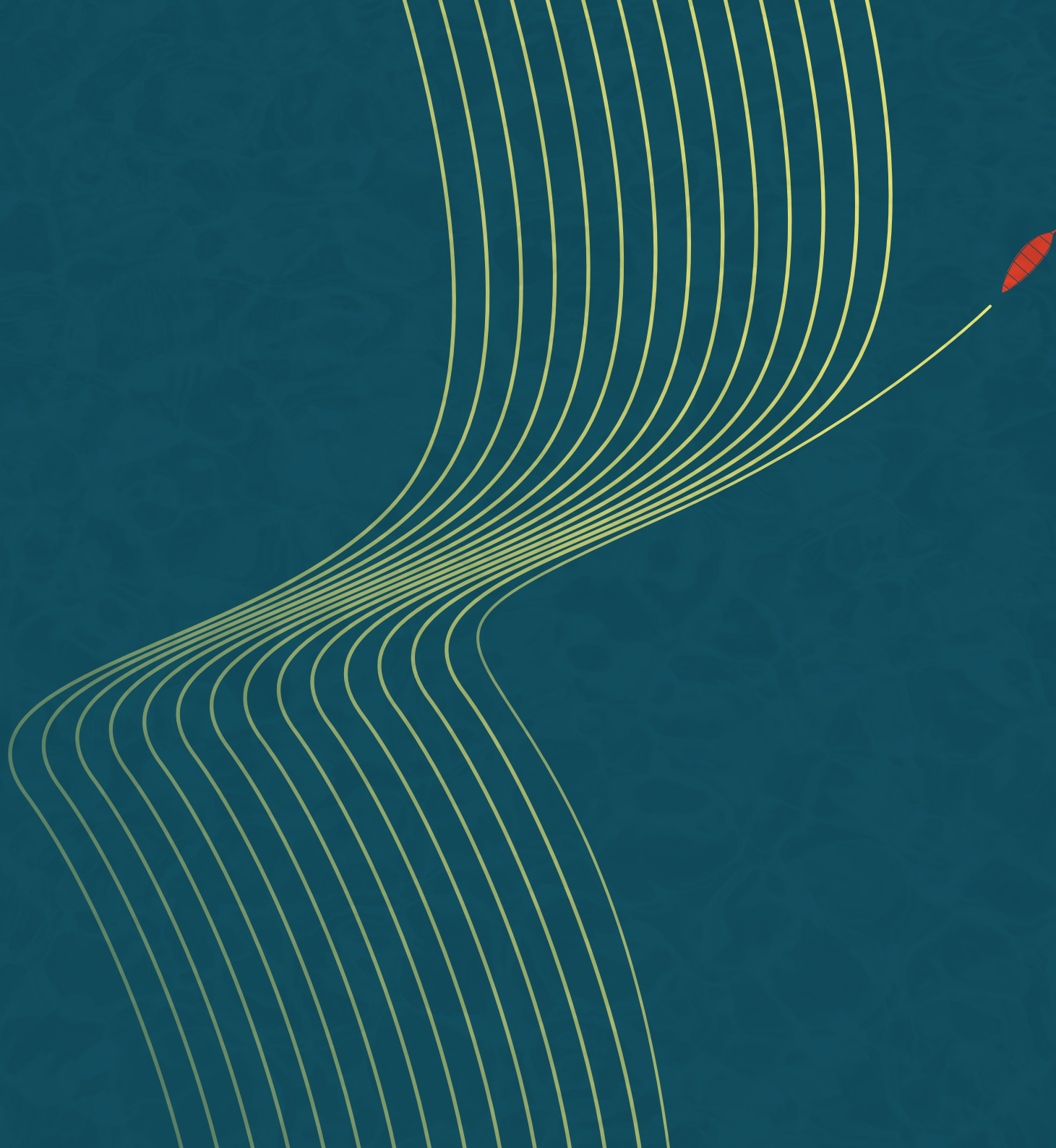
MoF, BB, BIDA, NBR, MoA, MoC, MoEFCC, MoHPW, MoI, MoPEMR, BSEC, DSE/CSE, financial institutions, SMEs and microenterprises, PKSF, SME Foundation, large private firms, BSCIC, IDCOL, BIFFL

Duration

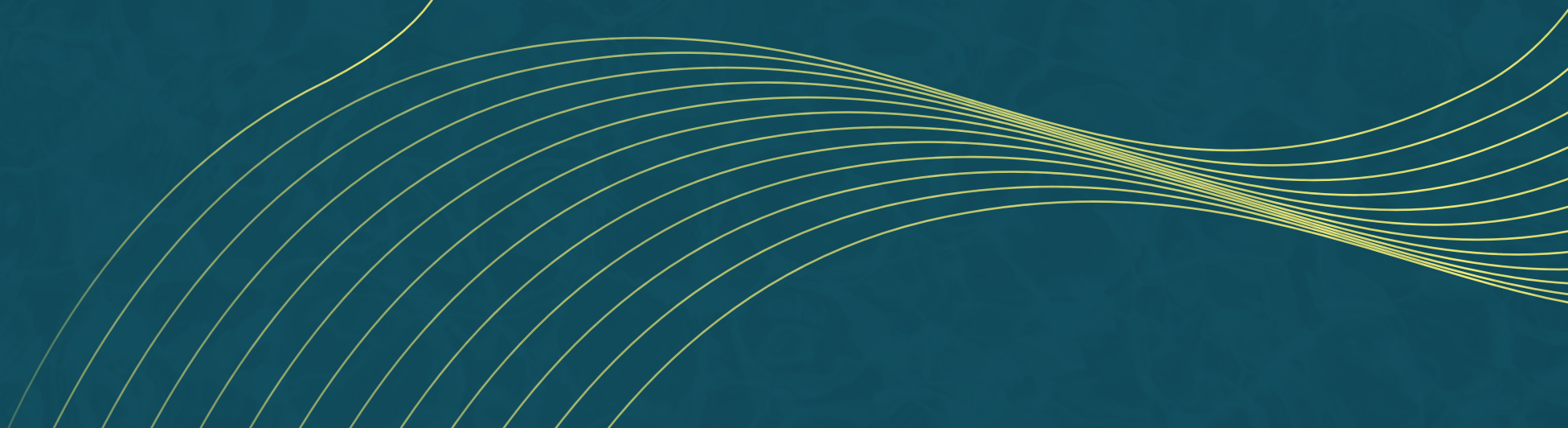
Medium Term

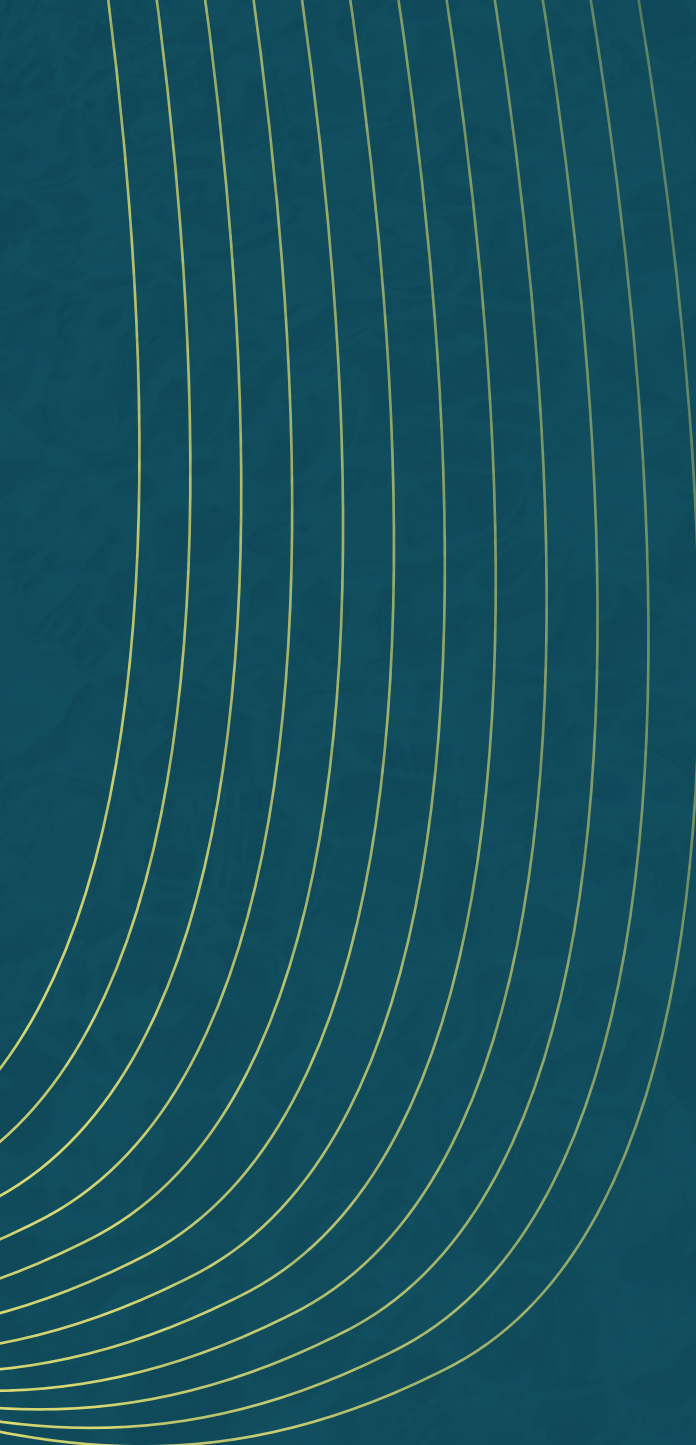
Most important actions

Integrate carbon pricing into its climate strategies and finance some of the country's environmental initiatives through decarbonization projects; establish a dedicated high-level national oversight body to coordinate ministries and agencies involved in the creation and oversight of policies, regulations, and incentives to foster green growth and green finance; provide extension services and technical assistance for businesses, especially microenterprises and rural businesses to adopt green practices; continue to introduce a wide mix of climate-friendly green incentives and track their fiscal and environmental impact; encourage access to international climate funds such as GCF, IFAD's ASAP program, GEF's SGP program, UNCDF's LoCAL program, and carbon financing; leverage private-sector financing in the capital and bond market by incentivizing companies with positive social and environmental impacts through better ratings; raise private-sector funds through new equity and debt instruments such as green bonds; encourage banks to develop long-term loan products for large-scale green infrastructure and energy projects; integrate green insurance solutions to minimize the risks of low-carbon projects; promote public-private partnerships for a range of environmental services, including partnerships with communities; promote green market innovations through green banking incentives and green refinance schemes; strengthen the CFF; introduce a green certification system; establish a green credit guarantee system.



Intro- duction





Chapter 1 introduces the proposed framework for implementing green growth in Bangladesh. There is an increasing need for action on green growth in Bangladesh, evidenced by (i) the threats that climate change and environmental degradation pose to the country's development goals; (ii) its desire for energy security; and (iii) its need for growth engines. Having acknowledged these needs, the Government of Bangladesh has communicated a strong ambition to transition to green growth through several national plans, such as the 8th Five-Year Plan, the 2041 Perspective Plan, and the Bangladesh Delta Plan 2100, among many others. The government, however, faces challenges in implementing green growth effectively, primarily due to inadequate prioritization of public investment and limited coordination between the annual development program formulation and the annual budget processes. As a response, this analytical document provides a clear strategic blueprint, through a proposed framework of recommendations, consisting of three objectives and nine policy directions. The recommendations elaborated throughout this document are intended to promote coordination between key ministries, provide suggested priority areas for investment, and propel Bangladesh on to a greener and more climate-resilient trajectory.

1.1 The imperative for Green-Growth Initiatives in Bangladesh

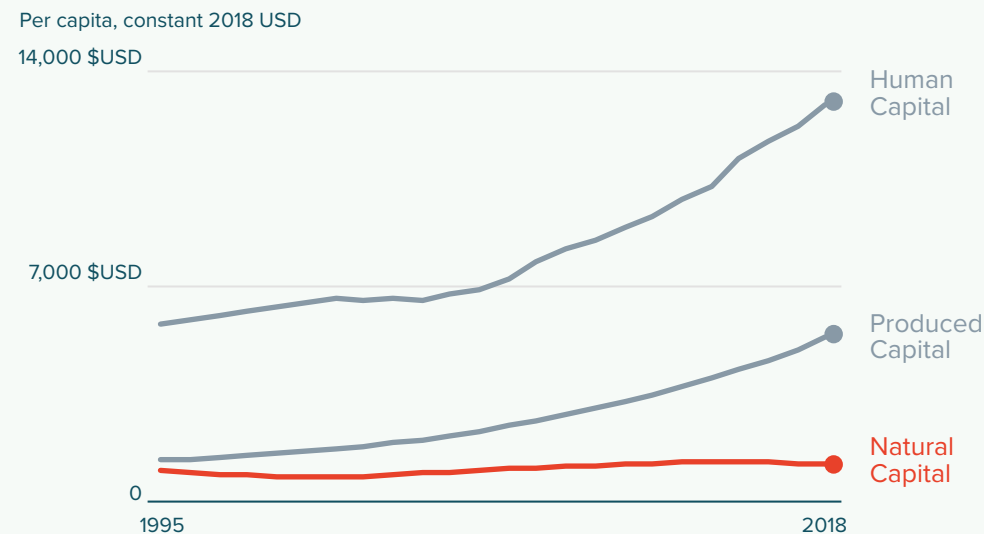
Environmental degradation and climate change threaten Bangladesh's development goals

In the coming decades, Bangladesh faces risks to its development because of the significant degradation of its natural capital and the country's considerable vulnerability to climate change. Over the past three decades, the country has experienced notable economic growth and significant poverty reduction. This has been accompanied by a considerable increase in the country's physical capital (Figure 1.1), largely the result of improvements in infrastructure and the provision of essential utilities. Human capital has also seen marked progress, with notable achievements in the education sector. This progress has, however, been accompanied by a deterioration in natural capital, evidenced by a depletion of the country's natural resources and high levels of pollution. The expansion of manufacturing and rapid urbanization has led to increased carbon intensity and limited resource-use efficiency. Between 2020 and 2022, Bangladesh's dropped from 162nd to 177th out of 180 countries in the Yale Environmental Performance Index (EPI).¹

¹ This is mainly due to a deterioration ecosystem services, the loss of fisheries resources, and an increase in air pollution from fine particulate matter (PM_{2.5}) over the past 10 years.

Figure 1.1 Trends in Bangladesh's Wealth Composition, constant 2018 US dollars per person

Bangladesh's growth has come at the cost of the country's **natural capital**



Source: World Bank (2021)

According to the World Bank’s 2023 Country Environmental Analysis (CEA), the annual cost of Bangladesh’s environmental degradation, which is linked to significant environmental health risks, amounted to around 17.8 percent of the country’s gross domestic product (GDP) in 2019 (World Bank, forthcoming). The highest costs are

due to outdoor and household air pollution, which together cause 54 percent of premature deaths from environmental causes. Lead exposure, and inadequate drinking water and sanitation, responsible, respectively, for 20 and 26 percent of total deaths, are further pressing challenges. Water pollution, including river pollution and saline intrusion; plastic waste management; soil degradation; and exposure to mercury and heavy metals are also serious environmental and natural resource issues that Bangladesh faces. All these have implications for productivity, welfare, and human capital formation and retention.

Despite making progress in improving adaptive capacity and resilience, Bangladesh remains vulnerable to climate change—the country ranks as the world’s seventh most-affected country in the Global Climate Risk Index 2000–19 (Statista 2023). Climate-related hazards, such as floods and riverbank erosion, affect approximately 1 million Bangladeshis annually, with two-thirds of the country experiencing inundation every 3–5 years. According to the World Bank’s Country Climate and Development Report (CCDR) (World Bank 2022), even under optimistic global climate scenarios, Bangladesh could face severe climate

risks, which might lead to the internal migration of 13.3 million people by 2050. Internal climate and rural-urban migration add pressure on cities and essential services, especially during extreme climate events that disproportionately affect disadvantaged groups. The nation also faces estimated average annual losses of approximately US\$ 1 billion (0.7 percent of GDP) from tropical cyclones alone, and the coastal population is at risk from events such as 100-year coastal floods, which could become more frequent. Indeed, sea-level rise may double asset risk as well as threaten agricultural production, water supplies, and coastal ecosystems. Furthermore, by 2040, climate variability could result in the loss of 6.5 percent of the country’s cropland, and 18 percent in southern Bangladesh, and by 2050 a fall of fully a third in Bangladesh’s agricultural GDP.

Climate and other environmental hazards have greater impacts on the poor and other vulnerable groups. Efforts to reduce poverty, particularly amongst populations whose livelihoods rely heavily on natural resources, continue to be hampered by climate change. Even after 50 years of independence, some regions in Bangladesh, such as the district of Kurigram, have poverty rates of up to 70 percent. Furthermore, communities exposed to multiple natural hazards, such as the western upazilas of Mymensingh and eastern upazilas of Rangpur, which face significant annual impacts from river flooding, heat stress, drought, and air pollution, have experienced less poverty reduction or even increased poverty levels.

This may result in costly coping strategies, such as divesting productive assets and reducing investment in human capital, affecting nutrition and education, among other services. The fact that frequent climate-related shocks and disasters can lead to long-lasting, multigenerational effects highlights the need for targeted, yet comprehensive and long-term solutions to address climate change and other environmental risks.

Bangladesh is pursuing an energy-security transition for long-term growth

Soaring energy prices, coupled with a high dependency on the ready-made garment (RMG) sector, causes major disruptions to Bangladesh’s economic progress. In the second half of fiscal year (FY) 2022, challenging external conditions gave rise to a significant balance-of-payments (BoP) deficit, prompting authorities to seek assistance through an International Monetary Fund (IMF) program. During this period, the current account deficit surged from 1.1 percent of GDP in FY 2021 to 4.0 percent in FY 2022. The primary driver behind this increase was a staggering 33.4 percent rise in merchandise imports, attributed mainly to heightened demand for intermediate goods in the RMG sector, as well as the impact of soaring energy and food prices.

To mitigate the escalating trade deficit, authorities implemented a series of import-suppression measures, including rolling electricity blackouts to conserve energy. Historically, natural gas has been the dominant fuel source for Bangladesh's electricity generation (IEA 2023). In 2021, however, natural gas prices were already rising, alongside a 22.2 percent increase in gas imports. Adding to the complexity, geopolitical tensions further aggravated the already precarious energy situation. Consequently, energy shortages have severely disrupted several key sectors, including agriculture and manufacturing. Notably, Bangladesh's crucial RMG industry experienced significant declines, with companies involved reporting drops of 50–55 percent in production during periods of energy rationing in 2022 (Daily Star 2022). Given that the RMG sector contributes more than 84 percent of the country's total exports, any drop in RMG production has substantial repercussions for the economy.

As a response, Bangladesh has established energy security as one of its top priorities for long-term growth. In its 8th FYP, the government emphasized the need to improve efficiency in power generation, including through expanding mining and exploration to increase the use of domestic coal and gas. As part of its Power Generation Plan 2030, a total of 44 new power plants are at various stages of construction. To ensure that energy security is sustained in a cost-efficient manner in the long run, however, a significant element of Bangladesh's transition

to energy security should focus on improving efficiency in the distribution of electricity, improving demand-side management, and expanding the use of cleaner sources of energy including from renewable sources such as solar, wind, and waste-to-energy for a more diversified energy mix. This includes undertaking the necessary reforms to create a more conducive environment for private sector participation in the development of the energy sector.

Bangladesh is in need of new growth engines

Trade has been a driving force behind Bangladesh's economic growth, job creation, and poverty reduction in recent decades.

Recent years, however, have seen a decline in trade performance and an overreliance on RMG exports (World Bank 2023). The erosion of competitiveness based on low wages and the impending loss of trade preferences due to the expected graduation from least-developed country (LDC) status are challenging the status quo. Factors such as high import taxes and non-tariff barriers have protected domestic industries at the expense of emerging exports.

Bangladesh, therefore, needs to explore new growth engines to increase its trade competitiveness and sustain long-term

economic development. In doing so, Bangladesh should seek opportunities in green growth, promoting green industries and fueling the adoption of innovative green technologies that also enhance living standards. Green growth should enhance productivity; boost investor confidence; open up new markets by stimulating demand for green goods, services and technology; contribute to fiscal consolidation by mobilizing revenues through green taxes and eliminating environmentally harmful subsidies; reduce risks of negative shocks to growth due to resource bottlenecks; and diversify exports, among other benefits to sustainable growth. Green growth can be nurtured in a number of forms, including through the greening of existing industries, research and development (R&D) for green technology innovation, and green skill development.

Opportunities for new growth engines also lie in more inclusive development approaches.

Promoting labor-force participation of females and other less-mobilized social groups, for example, can increase overall productivity and drive growth. Furthermore, inclusive approaches to growth lead to higher welfare outcomes, allowing for shared prosperity and a just transition to a green economy. This means that Bangladesh should make efforts to ensure decent job creation for all, and couple green growth reforms with targeted social protection measures to avoid disproportional negative impacts on vulnerable and disadvantaged groups.

1.2

Challenges for Implementing Green Growth in Bangladesh



Country context: green growth ambitions within government plans

The Government of Bangladesh intends to implement green growth in pursuit of sustainable development. Bangladesh's 8th FYP (FYs 2021–2025) charts an ambitious course towards the Perspective Plan 2021–2041 (PP 2041), and already embeds important green growth principles. The 8th FYP aims to eliminate extreme poverty and reach upper-middle-income country (UMIC) status by 2031 and high-income country (HIC) status by 2041. The 8th FYP centers on six core themes including (a) GDP growth acceleration, employment generation, and rapid poverty reduction with a broad-based strategy of inclusiveness; (b) a sustainable development pathway that is resilient to disasters and climate change, ensures sustainable use of natural resources, and successfully manages the inevitable urban transition; (c) development and improvement of critical institutions necessary to lead the economy to UMIC status; and (d) attaining Sustainable Development Goal (SDG) targets and preparing for the impact of LDC graduation.

Over the medium term, the 8th FYP targets comprehensive structural reforms across six sectoral development strategies to accelerate sustainable growth while building climate resilience across the economy. These will enhance public services, especially for people living in poverty, and promote better management of the environment and natural resources to support productivity and growth. **Annex 3** identifies entry points from the 8th FYP to target interventions for green-growth planning.

Elements of green growth are also embedded in the Bangladesh Delta Plan 2100 (BDP), a key instrument to address long-term climate change vulnerabilities at their source. The BDP aims to reduce the adverse effects of climate change on the population and generate co-benefits for environmental sustainability, job creation, and the provision of essential services.

Bangladesh submitted updated Nationally Determined Contributions (NDCs) to the Paris Agreement in August 2021, committing to reduce emissions by 89.5 million tonnes of carbon dioxide equivalent (MtCO₂e), or 21.9 percent, relative to business as usual (BAU) by 2030. The NDCs point to the preparation of the National Adaptation Plan 2023–2050 (NAP), which was approved in October 2022. To build climate resilience while stimulating sustainable and inclusive economic

growth, the NAP envisages six goals related to (a) protection against climate change variability and induced natural disasters; (b) climate-resilient agriculture; (c) climate-smart cities; (d) nature-based solutions (NbSs) for conservation of forestry, biodiversity, and the wellbeing of communities; (e) good governance through integrating adaptation into planning processes; and (f) transformative capacity building and innovation. The NAP interventions include 53 BDP climate-adaptation projects.

As such, ambitions for green growth are clearly embedded in Bangladesh's national plans, showing a commitment of the government to channel financing towards green investment and take on necessary policy reforms. Hence, green growth does not add to existing plans but rather serves as a strategic organizing principle for objectives already set out by the government.

Challenges in shifting from intent to actualization of green growth in Bangladesh

The Government of Bangladesh faces challenges in effectively implementing key green-growth interventions, primarily due to two significant factors. First, the Annual Development Programme (ADP), which is managed by the Ministry of Planning (MoP) and implemented by line ministries, does not adequately prioritize public investment to support green-growth interventions. Second, limited coordination between the ADP formulation and annual budget processes, managed by the Ministry of Finance (MoF), results in inadequate public investment management (PIM). This is evident in insufficient budgetary allocations to investment projects and a low execution rate. Climate-related allocations, for instance, currently stand at just 7.5 percent of the total budget (0.8 percent of GDP), as indicated in the Climate Fiscal Framework of 2020, leading Bangladesh to receive a D rating for budget alignment with climate change strategies in the 2021 Public Expenditure and Financial Accountability (PEFA) assessment.

To address these challenges and pave the way for a sustainable future, the present advisory document proposes a framework of recommendations to enable Bangladesh to transition to a green and climate-resilient development pathway. By providing a clear strategic blueprint, the proposed framework of recommendations will support the prioritization of policies and investment, promote coordination between key ministries, and propel Bangladesh on to a greener and more climate-resilient trajectory.

Overview of the advisory document

In the face of climate change and environmental degradation, the need for green growth in Bangladesh is paramount. The nation's progress has been remarkable, but its rapid economic growth and urbanization have increased carbon intensity and resource inefficiency, leading to pollution, reduced climate resilience, and natural resource depletion. Despite efforts to improve adaptation and resilience, Bangladesh remains vulnerable to climate change. The challenges are substantial, as evidenced by the country's position on environmental performance indices and the economic cost of environmental degradation.

In this context, a shift towards sustainable practices and green growth are imperative. This advisory document proposes a framework of recommendations for priority action to implement green growth in Bangladesh. The framework provides a strategic blueprint to address key development challenges, creating a roadmap for coordinated action and investment that will propel Bangladesh towards a greener, climate-resilient, and economically vibrant future.

Chapter 1 summarizes the need to shift to a green-growth approach by introducing three key issues that threaten the sustainability of Bangladesh's economic growth and highlights the challenges in implementing it despite clear government ambitions. **Chapter 2** introduces the analytical basis used to develop the framework of recommendations for green growth implementation. **Chapter 3** details the three objectives and nine policy directions of the proposed framework for implementing green growth in Bangladesh. Specific interventions, key institutions to be involved, and suggested indicators to track progress to 2030 are provided for each of the nine policy directions. **Chapter 4** provides recommendations to strengthen the regulatory framework, institutional arrangements, public finance management, and macroeconomic policy framework to create an enabling environment for the implementation of green growth. **Chapter 5** presents a financing plan with proposed investment options to implement green growth, using examples of green growth projects as potential investment priorities. These proposals are based on a comprehensive diagnostic study of the climate finance landscape in Bangladesh. **Chapter 6** provides a roadmap to implement the outlined financing plan. **Chapter 7** concludes the document.

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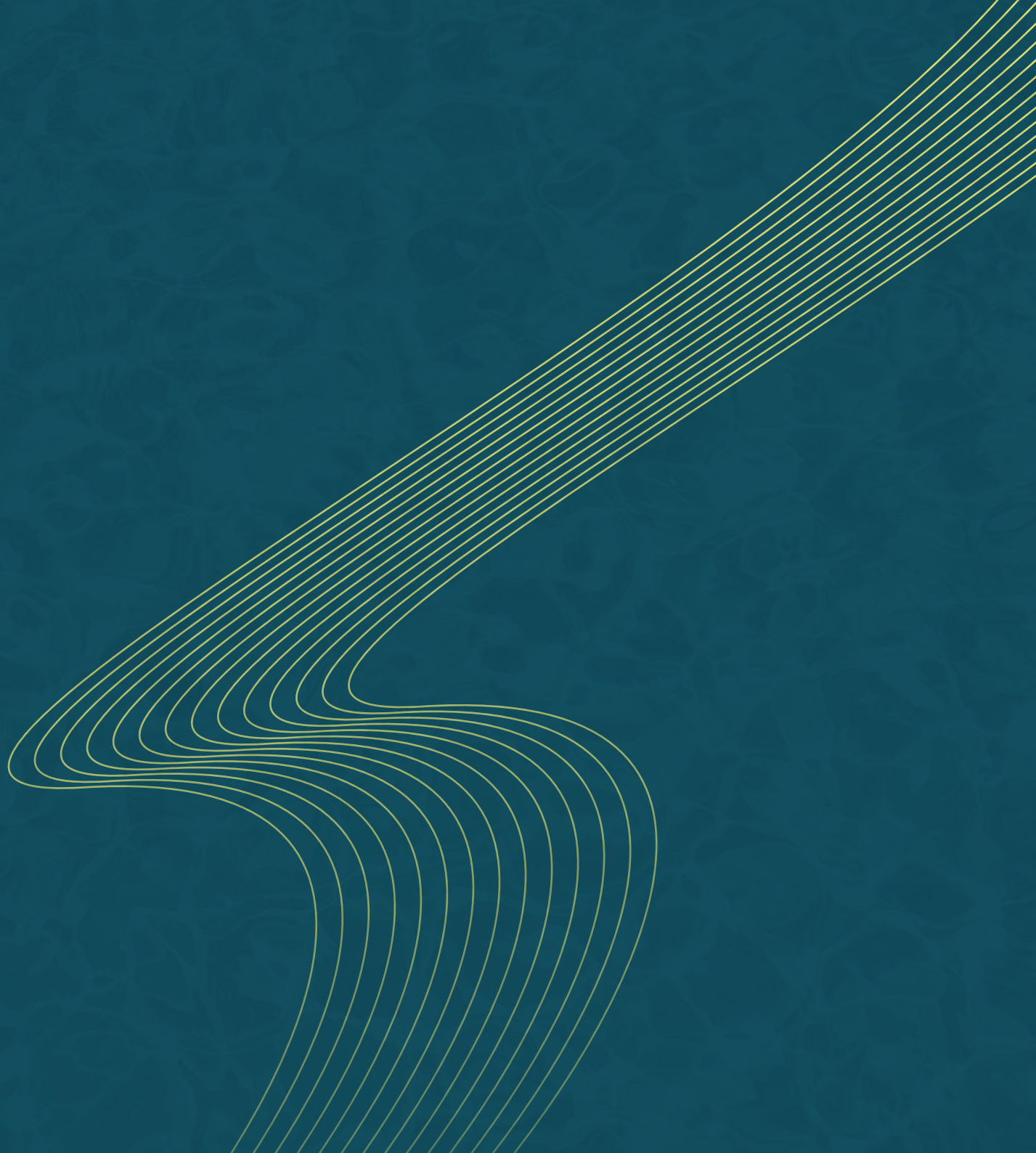
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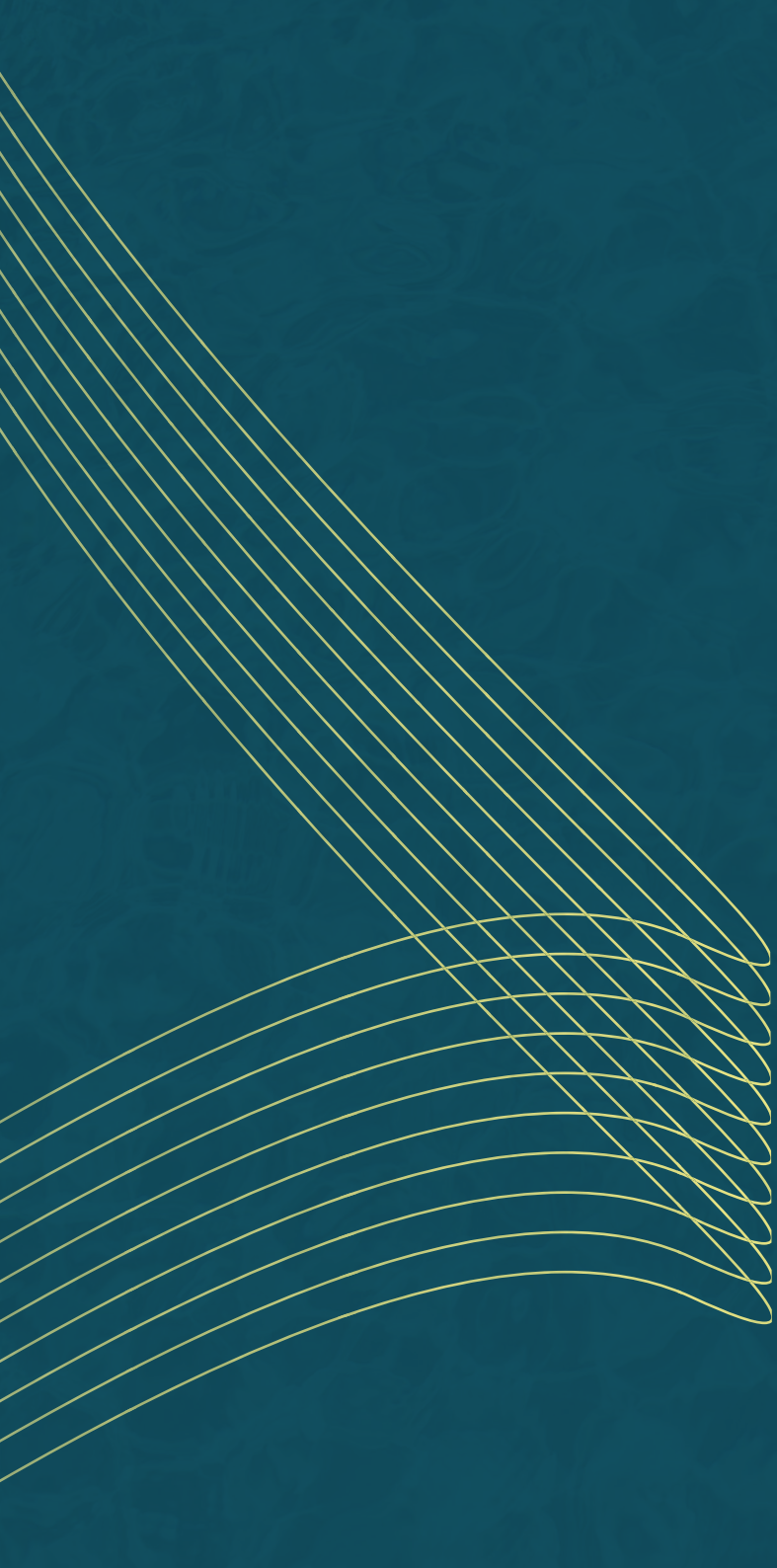
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Analytical Basis

for Identifying
Priority
Recommen-
dations



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Chapter 2 articulates the analytical basis from which the priority recommendations for green-growth implementation were derived. Based on diagnostics that benchmarked Bangladesh on key resilience, inclusion, sustainability, and efficiency indicators against other lower-middle income countries, areas in which Bangladesh significantly underperforms, are identified, and highlighted as urgent areas for action. Job opportunities and environmental consequences of investment in different sectors in Bangladesh are also explored, highlighting the potential for green and inclusive investment to be an important growth driver. As part of the prioritization process, two major criteria were considered: (i) urgency, and (ii) sustainable impact. Potential for sustainable impact encompasses both growth and welfare impacts that are expected to be long lasting. Through this process, which included a review of World Bank analytics, government plans, and consultations, three overarching objectives and nine policy directions were identified to serve as a roadmap for action to implement green growth in Bangladesh.

2.1 Resilience, Inclusivity, Sustainability, and Efficiency Diagnostics

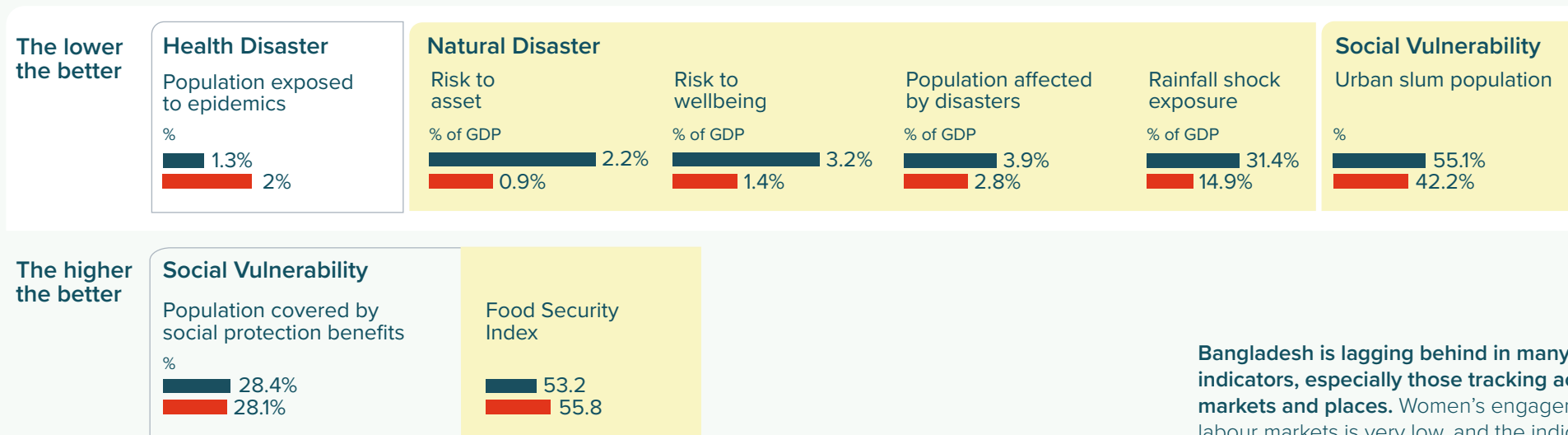
Economic growth in Bangladesh to date has come at the expense of public goods, such as clean air and water, that impact health and economic productivity in areas that are difficult to measure and not reflected in many economic statistics. As part of the Building Back a Greener Bangladesh Analytics, the World Bank carried out a diagnostic examining the performance of Bangladesh's economy in terms of four areas of interest that together define green, resilient, inclusive development (GRID), namely resilience, inclusivity, sustainability, and efficiency (RISE). As part of these diagnostics, Bangladesh was benchmarked on key indicators, 8–17 indicators for each pillar of RISE, against other lower-middle income (LMI) countries and the rest of the world. The main findings of the benchmarking are as follows.

Resilience in Bangladesh is poor, as exposure to the risks of natural disasters are high and aggravated by high social vulnerability. More than half the urban population lives in slums and only a small proportion of the population is covered by social protection benefits. Bangladesh has long been associated with food insecurity, contributing to a high prevalence of stunting among children younger than five years of age.

Figure 2.1. Benchmarking Bangladesh against Lower-middle Income Countries on Resilience

RESILIENCE RISE INDEX

Bangladesh is ahead of behind the **LMI average**



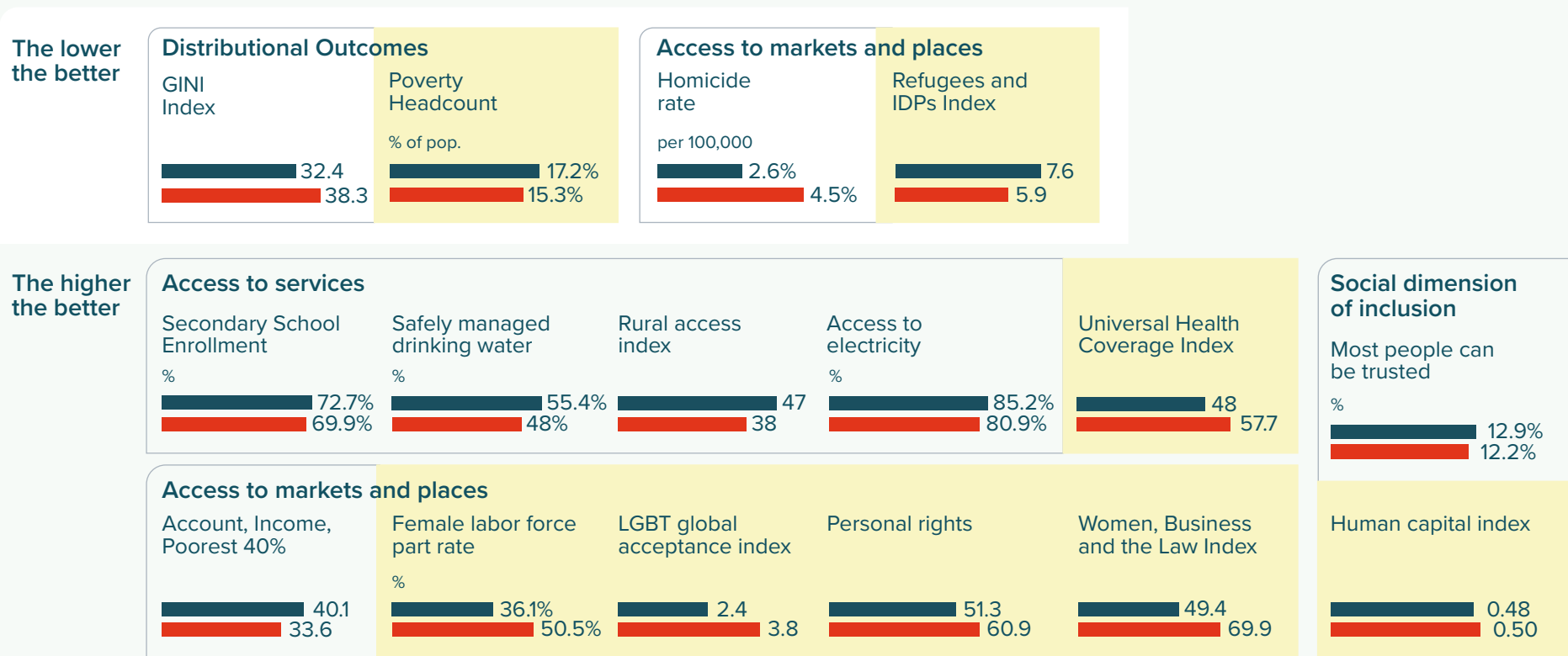
Source: World Bank 2022. Bangladesh RISE Benchmarking

Bangladesh is lagging behind in many inclusion indicators, especially those tracking access to markets and places. Women’s engagement in labour markets is very low, and the indicators suggest that there are inadequate laws to protect gender equality and lesbian, gay, bisexual, and transgender (LGBT) rights. The massive influx of Rohingya internally displaced people (IDP) and refugees from Myanmar since 2017 has put significant stresses on the country. Measures of social inclusion, such as levels of human capital and trust amongst fellow citizens, are strikingly low.

Figure 2.2. Benchmarking Bangladesh against Lower-middle Income Countries on Inclusion

INCLUSION RISE INDEX

Bangladesh is ahead of behind the **LMI average**



Source: World Bank 2022. Bangladesh RISE Benchmarking
The Gini index measures income, wealth, and consumption inequalities.

Figure 2.3. Benchmarking Bangladesh against Lower-middle Income Countries on Sustainability

SUSTAINABILITY RISE INDEX

Bangladesh is ahead of behind the **LMI average**

The lower the better

Carbon decoupling

Change in GHG emissions per capita

% change, 2018 - 2019



Natural resources and pollution

Mortality rate attributable to unsafe WASH services

per 100,000



Forest loss, long term

% of forest loss since 1900



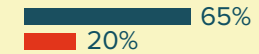
Mortality rate attributable to air pollution

per 100,000



Land degradation

% of total land area



The higher the better

Natural resources and pollution

Biodiversity & habitat index

per 100,000



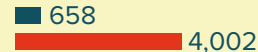
Coastal waters health (Chlorophyll-a deviations)

since 2000



Renewable internal freshwater resources

per capita



Wastewater treatment capacity

% of wastewater produced



Water quality, nutrients, salts, chemicals (SDG 6.3.2)



Carbon decoupling

Renewable energy consumption

% of total energy consumption



Sustainability performance varies widely, reflecting how spillovers from economic growth have contributed to premature mortality, elevated morbidity, and declining environmental services. Natural resource degradation is concerning, particularly for freshwater scarcity and pollution, forest loss, and air pollution. Bangladesh is water stressed, and deforestation has brought risks of heavy flooding and rapid siltation.

Death rates attributable to air pollution are above average LMI country levels. More progress is needed to decouple Bangladesh's economy from its carbon emissions. The country is not performing as well as other countries at increasing its share of renewable energy in the national energy mix and greenhouse gas (GHG) emissions per person have been increasing.

Key: SDG 6.3.2 concerns the proportion of bodies of water with good ambient water quality

WASH = water, sanitation and hygiene

Source: World Bank 2022. Bangladesh RISE Benchmarking

Figure 2.4. Benchmarking Bangladesh against Lower-middle Income Countries on Efficiency

EFFICIENCY RISE INDEX

Bangladesh is **ahead of** **behind** the **LMI average**

The lower the better

Resource Use

Energy intensity

% change, 2005 - 2015



Governance

Tenure Insecurity

% of pop.



The higher the better

Resource use

Agricultural land productivity

\$/ha



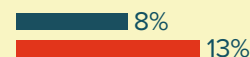
Total GNI/GHG emissions

\$/mt CO2 eq



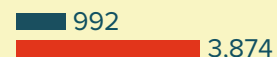
Air pollution - economic efficiency

%



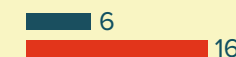
Agricultural value added per worker

\$



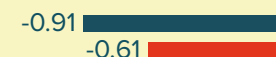
Water Productivity

\$ per m3 water

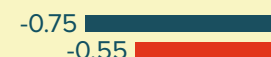


Governance

Control of corruption



Governance effectiveness



Transport and ICT

Logistics performance index



Digital penetration index



Population using the internet

%



In terms of efficiency, Bangladesh lags on most natural resource efficiency metrics in comparison to other LMI countries. Agricultural-labour productivity ranks low, and Bangladesh has particularly poor water productivity—output per cubic meter (m3) of water. Bangladesh has low economic value added per unit of GHG emissions, and its expenditure on enacting air pollution abatement could be more effective and cost less. Although Bangladesh performs relatively well in terms of governance effectiveness and digital penetration, it has relatively inefficient supply chain logistics and low internet service provision.

Key: ha = hectare

GNI = gross national income

Source: World Bank 2022. Bangladesh RISE Benchmarking

The RISE diagnostic sets the foundation for identifying areas in urgent need of addressing if Bangladesh is to be set on a green, resilient, and inclusive development trajectory, particularly around resilience to climate change and other environmental risks, strengthening human capital, and the more efficient and sustainable use of resources. The diagnostic shows that low levels of social protection, human-capital development, female participation in the labor force, and health-care coverage; low access to markets; high exposure to natural disaster risks; high levels of forest loss, air and water pollution, and freshwater scarcity; low wastewater treatment capacity; and low levels of natural resource efficiency are all areas that require urgent action and for which Bangladesh is performing well below other LMI countries.

Further benchmarking with UMICs suggests that Bangladesh's resilience and sustainability are particularly far behind its comparators. In other words, for Bangladesh to achieve its aim of becoming a UMIC by 2031, critical vulnerabilities to climate change and other environmental challenges must be addressed. The country's productive assets, human capital, and overall well-being face significant risks from natural disasters. Furthermore, climate risks are aggravated by social vulnerability—more than half of Bangladesh's urban population lives in informal settlements and is therefore particularly vulnerable to crime, disease, and natural disasters.

The coverage of social assistance programs remains incomplete, with only three in 10 households covered, and there are limits to the ability of programs to respond to shocks. Managing the delta environment continues to be a top challenge for the country in adapting to climate change and building resilience, as clearly indicated in the BDP, with the coastal zone along the Bay of Bengal being highly vulnerable to climate-related hazards such as cyclones, storm surges, coastal erosion, and sea-level rise. Furthermore, the degradation of natural resources is of particular concern with regard to freshwater scarcity and pollution, forest loss, and air pollution. It is important to note that the poor are often disproportionately affected by climate impacts and environmental degradation, both in rural and urban areas.

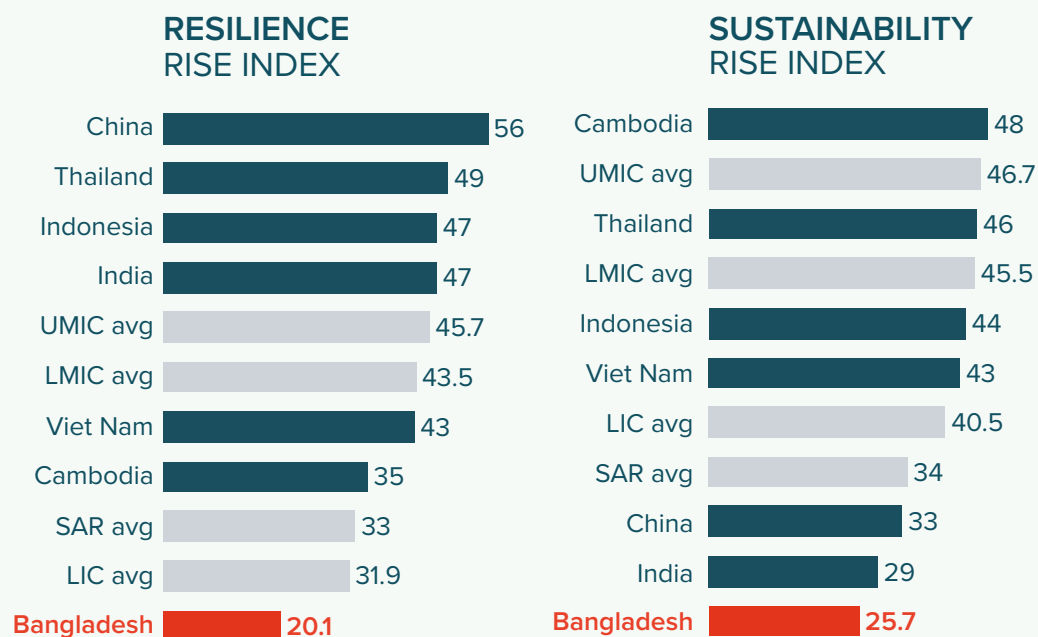


Figure 2.5 Average Rank on Resilience and Environmental Sustainability, RISE indexes, Percentile

Bangladesh ranks among the lowest in Resilience and Sustainability in the RISE index

Grouping

Bangladesh Other countries Averages

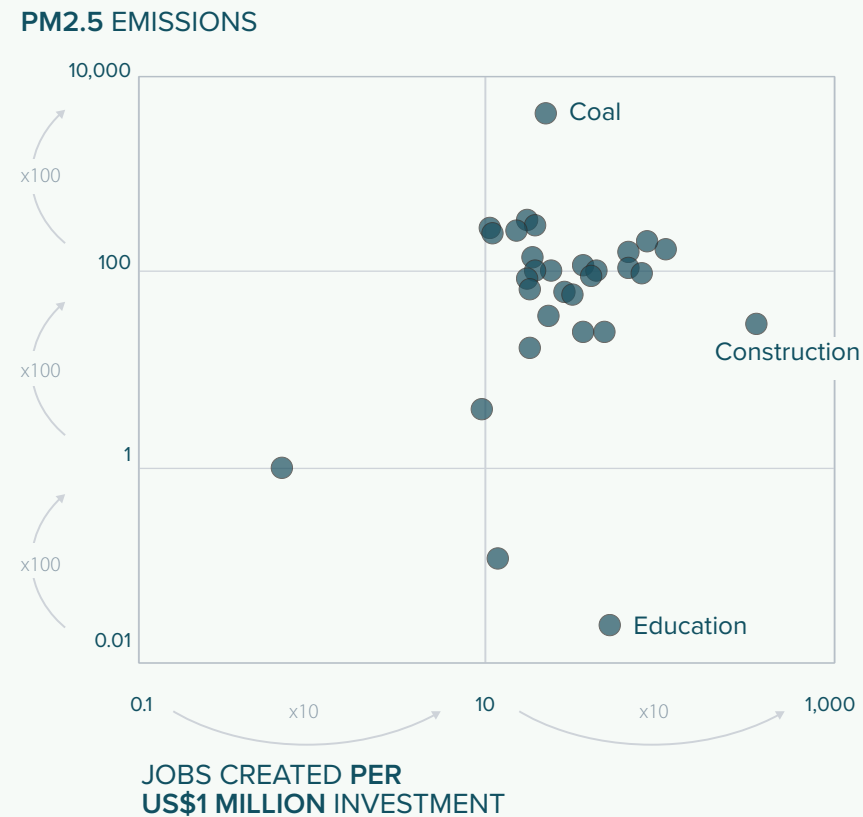


Job opportunities and environmental consequences of investment in different sectors in Bangladesh are also explored as part of the RISE diagnostics, highlighting the point that green and inclusive investment can be a driver of growth and therefore debunking the false premise that pure tradeoffs exist between emissions and job creation. Figure 2.6 plots the estimated number of jobs created from a US\$ 1 million investment against the estimated fine particulate matter (PM_{2.5}) emissions that would be generated from the same investment. Industries such as electricity generated from coal, mining, and agriculture tend to be both powerful job and emissions generators, while sectors such as education, textiles, and healthcare have high job-creation and lower emissions profiles. These sectors offer opportunities to green the brown, through which it would be possible to make substantial employment gains while also reducing GHG impacts and, in the process, tackle the significant air-pollution challenges in Bangladesh.

Source: World Bank 2022. Bangladesh RISE Benchmarking

These opportunities are present in all major industries including climate-smart and sustainable agriculture, tourism, fisheries and forest management. In particular, these opportunities include the potential for synergies between expanding some sectors, i.e., services, while greening others, i.e., agriculture and manufacturing. In addition, emissions in energy-intensive sectors are dependent on national energy mixes which, in Bangladesh, are very brown. Targeted investment in clean energy could therefore significantly reduce emissions across many critical sectors. This analysis shows that environmental, economic and social objectives can be achieved simultaneously.

 **Figure 2.6** Jobs Created and Fine Particulate Matter Emissions Generated per US\$ 1 million investment



Source: World Bank 2022. Bangladesh RISE Benchmarking


2.2 Prioritization Process for the Selection of Recommended Green-Growth Objectives and Policy Directions

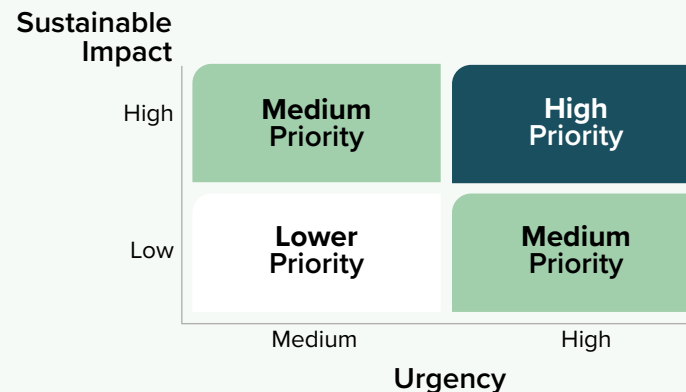
The green-growth framework of recommended objectives and policy directions outlined throughout this advisory document was developed through a prioritization process in which two major criteria were considered (Figure 2.7).

Urgency: high urgency refers to areas that demand immediate action to address major vulnerabilities and prevent additional risks and lock-in effects. Areas of high urgency are identified primarily through the RISE diagnostics, which highlight areas in which Bangladesh significantly underperforms on resilience, inclusion, sustainability, and efficiency compared to other LMI countries.

Sustainable impact: areas identified as having high sustainable impact; good potential for job creation; positive welfare impacts; and are identified by World Bank analytics²; existing government plans, especially the 8th FYP; and consultations with representatives of civil society, youth, businesses, academia, and government agencies as having long-lasting green-growth impacts. Furthermore, in the selection of the priorities, there was a focus on addressing market failures, internalizing externalities, improving governance, and nudging producers' and consumers' behavior. The priorities aim to contribute to green-growth implementation through four effects: an input effect—increasing

production factors; an efficiency effect—bringing production closer to the production frontier; a stimulus effect—stimulating the economy in times of crisis; and an innovation effect—accelerating development and adoption of technologies.

 **Figure 2.7** Prioritization Matrix for the Selection of Recommended Objectives and Policy Directions



Source: World Bank

² A list of World Bank analytical products that were referred to is provided in Annex

Welfare impacts will be greater if efforts are made to make green policies inclusive.

Welfare impacts, which are considered important in determining the sustainable impact of interventions, can be derived through direct environmental benefits; improvements in public health; distributional effects, including poverty reduction; job creation; transitions to cleaner and decent jobs; and through increased resilience to shocks, including natural disasters and commodity price volatility.

Three objectives and nine policy directions were derived through a qualitative and participatory prioritization process to serve as a roadmap for action to implement green growth in Bangladesh.

The policy directions were largely drawn from a review of diagnostics³ and government plans⁴; and a synthesis of priorities that were commonly identified, documented, and highlighted from the diagnostics and government plans; and a series of consultations with World Bank teams, government, and external stakeholders to vet the identified priorities. The objectives and policy directions are described in further detail in the Chapter 3. The potential for input, efficiency, stimulus and innovation green-growth effects from the nine policy directions are shown in Table 2.1.

³ Including the Systematic Country Diagnostic (SCD) 2021 Update, the CCDR, the CEA, the RISE Benchmarking, among other World Bank diagnostics

⁴ Including the 8th FYP, Mujib Plan, BDP, among other government plans



Table 2.1. Input, Efficiency, Stimulus, and Innovation Effects of the Proposed Nine Policy Directions

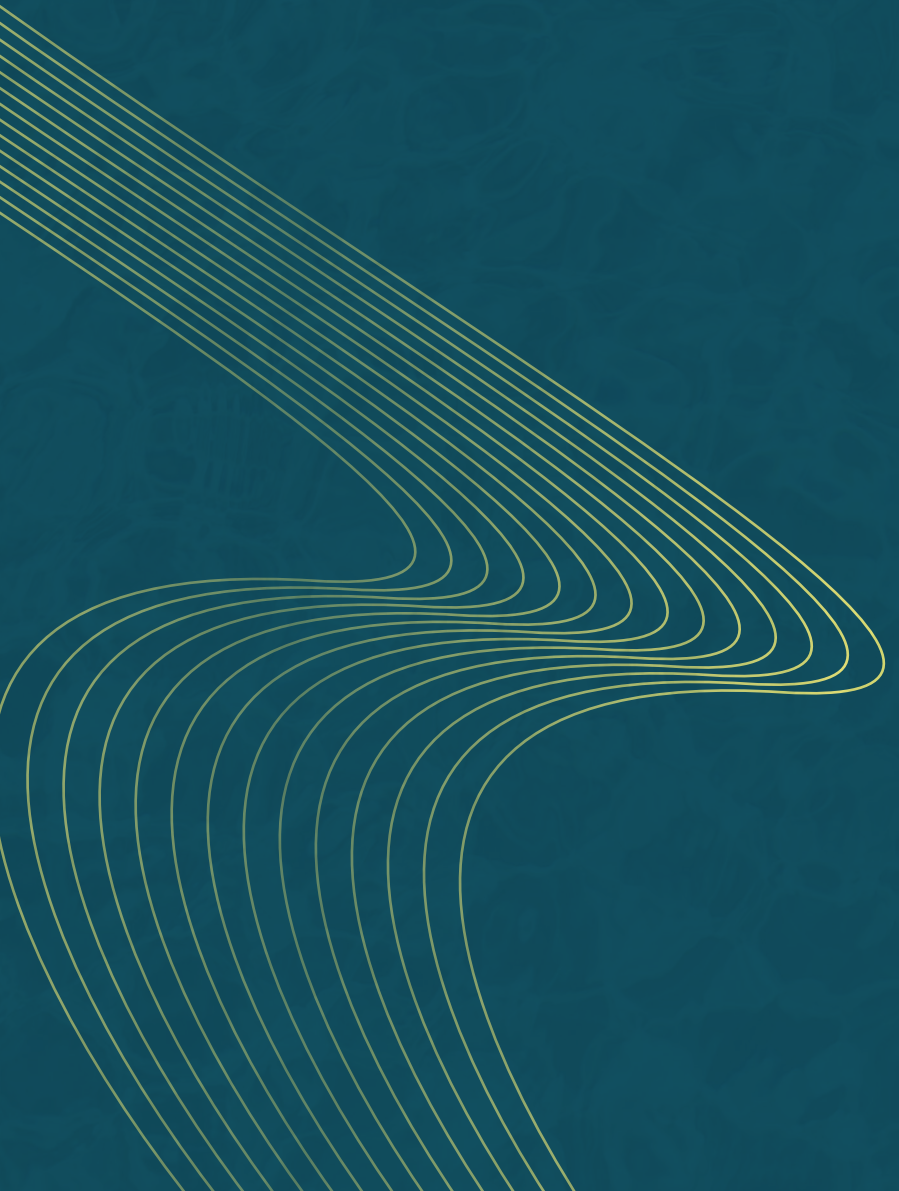
Objective	Policy Direction	Input	Efficiency	Stimulus	Innovation
Facilitate effective environmental governance and energy transition	1 Strengthen environmental governance and accounting systems				
	2 Enable energy independence through energy efficiency and the trade in renewable energy				
	3 Promote inclusive connectivity through green transport and logistics systems				
Foster new growth engines and skills for green growth	4 Invest in new green industries and human capital to promote job creation and green innovation				
	5 Promote livable green cities through urban regeneration and new smart cities				
	6 Stimulate productive agriculture, promote the blue economy, strengthen coastal resilience, and sustainably manage natural capital				
Achieve a just transition enabling a resilient, green, and healthy society	7 Strengthen social protection and the capacity of citizens to adapt to an inclusive climate-resilient economy				
	8 Improve public health and wellbeing through a cleaner environment				
	9 Enhance engagement and cooperation with the international community on climate change				

Source: World Bank



**Proposed
Bangladesh**

Green Growth Framework



Chapter 3 dives into the proposed framework for implementing green growth in Bangladesh. The framework was formed through a thorough review of the government's existing plans, sectoral diagnostics, leading research on Bangladesh's economy and climate-change landscape, and through a series of consultations with representatives of academia, businesses, civil society, government agencies, and youth. The priorities aim to contribute to green-growth implementation through input, efficiency, stimulus, and innovation effects. Contributions to welfare are expected through direct environmental benefits, distributional effects, and increased resilience to shocks. The framework lays out three overarching objectives: (a) to facilitate effective environmental governance and an energy transition; (b) to foster new growth engines and skills for green growth; and (c) to achieve a just transition to a resilient, green, and healthy society. The proposed framework envisions these three objectives being fulfilled through action in response to nine policy directions. The chapter delves into each policy direction, highlighting specific interventions, key institutions to be involved, and suggested indicators to track progress to 2030.

3.1 Objectives and Policy Directions for Implementation

The Bangladesh Green-Growth Framework proposed in this report presents a green, climate-resilient action roadmap for prioritizing policies and investment to address Bangladesh's key development challenges—namely, climate change and degradation, the energy crisis, and the need for resilient economic growth. The Bangladesh Green-growth Framework envisages three main objectives and nine policy directions (Table 3.1).

These objectives and policy directions were derived from a review of leading research on Bangladesh's economic development and climate-change landscape, including World Bank diagnostics and consultations with academia, businesses, civil-society representatives, government agencies, and youth. The proposed targets for major green indicators are considered and subject to further development through stakeholder consultations with relevant government agencies.

Table 3.1 Bangladesh Green-Growth Framework's Objectives and Policy Directions



Objective 1: Facilitate effective environmental governance and an energy transition

The first objective of the proposed Bangladesh Green-growth Framework is to deal effectively with climate change and address energy-security issues by **laying the foundations of enabling policies and infrastructure for green growth**. Diversifying away from fossil fuels will help Bangladesh improve its energy independence and effectively deal with volatile energy imports hurting its balance of payments. This objective calls for the increased use of new and renewable energy sources and efficient energy-demand management.

Green infrastructure investment can confer many economic benefits on Bangladesh. Those benefits include boosting growth, creating jobs, promoting sustainable industries, and building resilience against climate shocks and other disruptions. Setting up an ecosystem for environmental accounting will give valuable information about natural capital stocks, emissions, pollution, and so forth to policymakers for making evidence-based decisions and channeling green financing.

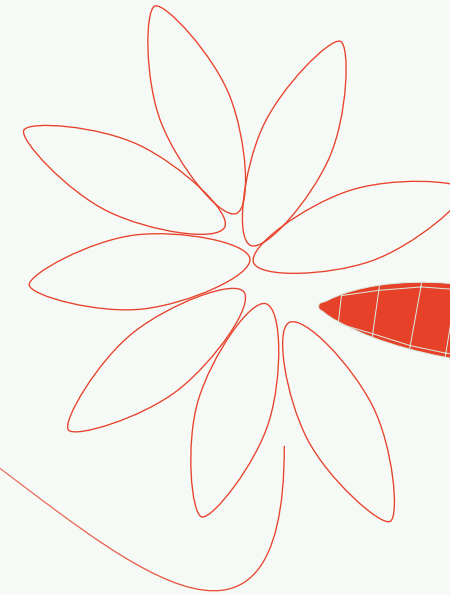


Policy Direction 1 Strengthen environmental governance and accounting systems

One of the most important tasks in implementing green growth in Bangladesh is laying the groundwork for the effective and sustained reduction of GHG emissions and air pollution. Air-quality standards across multiple sectors will improve health and increase climate resilience.

Opportunities

- Bangladesh would benefit from (a) establishing and implementing a national GHG emissions inventory and measurement, reporting and verification (MRV) system, (b) establishing emission-disclosure targets, and (c) making GHG reporting mandatory for businesses, government-owned enterprises, urban local bodies, and other economic actors.
- Environmental degradation costs should be explicitly accounted for in planning, and green public financial management (PFM) should integrate environmental concerns in budgetary management. Project selection should consider environmental degradation issues for all investment projects, necessitating strengthening institutional capacities in relevant ministries.



- Setting up a credit-risk guarantee fund at the Bangladesh Bank (BB) can promote investment to reduce pollution directly or indirectly from the brick-making sector and municipal waste management, along with encouraging clean (biogas) cookstoves and rooftop solar systems.
- Bangladesh should pursue strategic afforestation and sustainable forest management to increase its overall carbon-sequestration capacity, promote the sustainable, productive use of its forest resources for livelihood generation, strengthen coastal resilience, and unlock climate financing opportunities.

Box 3.1

Greenhouse Gas Inventory System for Bangladesh

A national inventory system is a fundamental requirement for Bangladesh, offering a comprehensive insight into the country's GHG emissions and their sources. This system's significance lies in several critical aspects.

Firstly, it serves as a vital tool for measuring progress towards Bangladesh's ambitious target to reduce GHG emissions by 5 percent from business-as-usual levels by 2030. To effectively track progress and identify sectors that demand emissions reductions, an accurate and reliable GHG inventory system is essential.

Secondly, this system aids in identifying priority mitigation action by pinpointing the sectors and activities contributing the most to Bangladesh's emissions. This, in turn, informs the development of policies and facilitates the implementation of low-carbon development strategies.

Thirdly, as a developing nation with limited resources, Bangladesh can leverage a robust GHG inventory system to access international climate finance.

This financial support is crucial for the country's efforts to reduce emissions and adapt to the consequences of climate change.

Fourthly, as a signatory to the United Nations Framework Convention on Climate Change (UNFCCC), Bangladesh is obligated to report its GHG emissions inventories regularly. A national GHG inventory system ensures compliance with these reporting requirements, showcasing the nation's commitment to addressing climate change.

Lastly, the establishment and operation of a GHG inventory system require a significant investment in terms of human and technical resources. This investment would help build awareness and enhance capacity among various stakeholders, including government officials, private-sector entities, and civil-society organizations, regarding the importance of monitoring and mitigating emissions.

Critical Implementation Actors to be Empowered

The initial key institutions involved in the above interventions could be the following. Note that the Government of Bangladesh could benefit from holding national consultations to refine the roles, responsibilities, and enabling policy.

- The Ministry of Environment, Forest, and Climate Change (MoEFCC) would benefit from being designated as the nodal body to host and administer the national GHG inventory and associated information systems.
- The Bangladesh Securities and Exchange Commission (BSEC) could be empowered to lay down and enforce standards and requirements for listed companies to disclose non-financial sustainability-related information in line with global sustainability-reporting standards such as the Global Reporting Initiative (GRI) (Table 3.2).



Table 3.2 Indicative Targets for Proposed Major Green Indicators for Emissions Disclosures and Forests' Carbon Absorption

Parameters relating to disclosures and carbon absorption	Observed 2019	Predicted 2025	2030
Emissions disclosure level in listed companies (%)	0 ^a	40	100
Carbon absorption by forests (MtCO ₂ e/year)	0.81	3.31	5.81 ^b

Source: World Bank

Note: a Masum et al. (2019); b World Bank (2022c).



Policy Direction 2

Enable energy independence through energy efficiency and renewable energy trade

Immediate opportunities for further development in Bangladesh's energy sector will involve institutional, governance, and fiscal policy interventions. In addition to the sectoral priorities mentioned in the previous section, Bangladesh must prioritize interventions to improve energy access quality, affordability, and reliability and build resilience in its power systems.

Opportunities

- **Cost recovery and energy efficiency:** the lack of cost recovery and energy inefficiency are the main issues holding back investment and innovation in the energy value chain. Energy tariffs and gas prices must adequately reflect the cost to incentivize energy efficiency and invite investment in less carbon-intensive generation. Low tariffs are detrimental to utility financial performance and represent a disincentive for investment in more sustainable energy sources or efficiency.
- **Expanding renewable energy capacity and regional trade:** renewable energy potential is likely larger than some past estimates suggested. The World Bank's Scaling Up Renewable Energy Program investment plan

estimates a total renewable energy technical potential at 3.7 gigawatts (GW). The technical potential for rooftop photovoltaics (PV) in Dhaka alone, however, is around 7 GW (ESMAP 2022), and the draft Sustainable and Renewable Energy Development Authority (SREDA) National Solar Energy Road Map 2021–2044 estimates the total PV potential at 40 GW, comprised of 12 GW rooftop and 28 GW utility-scale PV. The economics of domestic projects in the near to medium term will likely remain less favourable than for renewable energy imports. The indicative tariff for domestic solar projects under development is estimated at US¢ 7.5–8 per kilowatt hour (kWh) compared to US¢ 6.0–6.5 cents per kWh for solar-based electricity imported from India. Expanded access to clean power sources in India, Nepal, and Bhutan will support an increased share of green and least-cost energy in the energy mix⁵; displacement of costlier and dirtier power generation; the phase-out of dilapidated and highly inefficient gas-based steam turbines⁶; and reduce demand on scarce land resources.

- **Improving transmission and distribution:** transmission bottlenecks prevent lower-cost electricity, generated by less carbon-intensive plants, from reaching the final consumer and

⁵ International Finance Corporation assessment, including additional transmission charges and losses

⁶ Repowering these plants to more efficient combined cycle gas turbines should also be considered

could prevent the integration of the needed high volume of energy generation from renewable sources. Transmission bottlenecks contribute to low utilization of new generation capacity—43 percent in 2019.

- On the policy front, **Bangladesh must move away from fossil-fuel subsidies, short-term emergency power use, and ensure competitive procurement of all power generation sources.** This may be accompanied by efforts to increase the share of energy from renewable sources in Bangladesh’s energy mix through a more developed regulatory framework, a systematic effort to identify domestic project sites and develop them competitively as public-private partnerships.
- **Rationalize tariffs:** the government has recognized the need to increase power-sector gas prices, which are heavily subsidized. In July 2019, the regulator raised average consumer prices by 33 percent, with the power sector receiving a 40 percent increase (Atlantic Council 2020).

Recommendations

The country’s successful energy transition requires coordinated policy action to ensure the sector’s financial sustainability and enable private investments. In June 2021, the Government of Bangladesh announced its decision to cancel the construction of at

least ten major coal-fired power plants with a capacity of approximately 8,451 megawatts (MW). To complement such positive decisions, the country must attract foreign direct investment for alternative sources of power generation, including renewables, which are affordable, to meet the rising demand on power. Increasing the share of renewable sources in Bangladesh’s energy mix will require several conditions including a more developed regulatory framework, a systematic effort to identify domestic project sites and develop them competitively as public-private partnerships (PPP), the elimination of fossil-fuel subsidies, investment in battery storage, a deliberate focus on importing electricity generated using renewable sources from neighboring countries, and the expansion of cross-border transmission.

- New and renewable energy supplies can be strengthened through investment in utility-scale energy generation from renewable sources, augmented transmission, and distribution infrastructure for renewable-energy integration. This would allow Bangladesh to pursue new cross-border renewable-power trade with neighboring countries such as Bhutan and Nepal and strengthen the existing power trade with India.

Introducing fiscal prudence in the sector will require moving away from fossil-fuel subsidies and ensuring the competitive procurement of all sources of power generation is also important for

the sustainability of the energy sector. It is also crucial to adopt a power-sector master plan based on sound demand projections, least-cost power supply, and a special focus on imports.

- Reforming fossil-fuel subsidies could support climate change goals and free up resources for sustainable-energy investments. Implementing a green tax on fossil fuels could discourage GHG emissions while generating revenue for clean energy and environmental programs. Furthermore, such a step would allow for exploring the energy transition. Green hydrogen⁷ is emerging as a key investment for the energy transition. Bangladesh has an existing gas network whose infrastructure could pilot the blending of green hydrogen with existing domestic gas.

The government needs to review the design of its power market to introduce more competition, reduce subsidies, improve efficiencies in state companies, strengthen the role and competence of energy regulators, and develop a more attractive environment for private investment, particularly in domestic gas development and renewable energy.

⁷ Green hydrogen is obtained by electrolysis of water. This process is entirely powered by renewable energy, generates no polluting emissions and is the cleanest and most sustainable hydrogen.

- Bangladesh can accelerate the rollout of gas meters for residential consumers, pilot smart meters for industrial consumers, and integrate better monitoring systems on the gas distribution network.
- The surge of GHG emissions in Bangladesh over the past three decades was primarily due to increased energy use, consistent with the industrial sector's expansion and increased access to electricity. Greenhouse gas emissions from energy production and fuel combustion surpassed GHG emissions from agriculture in 2017.
- Bangladesh should increase energy efficiency across sectors, which requires improved institutional capacity to strengthen the regulatory framework and finance mechanisms, and to engage private-sector service providers and vendors. One example is that Bangladesh could introduce and implement fuel-efficiency standards for vehicles of all categories in a phased manner.

Critical implementation actors to be empowered

The initial key institutions involved in the above interventions could be the following. Note that the government could benefit from holding national consultations to refine the roles and responsibilities.

- Sustainable and Renewable Energy Development Authority (SREDA), the Power Division, the Ministry of Power, Energy and Mineral Resources (MoPEMR);
- Bangladesh Road Transport Authority (BRTA), Roads and Highways Department (RHD); and
- the Department of Environment (DoE), under the MoEFCC (Table 3.3).



Table 3.3 Indicative Targets for Proposed Major Green Indicators Relating to Energy

Green growth parameters relating to energy	Observed 2019	Predicted 2025	2030
Renewable energy in the energy mix (%)	3 ^a	22	34 ^b
Cross-border electricity trade	1,160 MW	3,120 MW	5,080 MW ^c
Coverage of prepaid gas meters (% residential consumers, Titas Gas Transmission & Distribution Company Limited) ^d	15	54	93
Solar irrigation pumps (Nos.)	2,659 ^e	25,000 ^f	47,000

Source: World Bank

Note:

a <https://asia.nikkei.com/Politics/International-relations/Bangladesh-India-Nepal-near-milestone-electricity-trade-deal>;

b <https://ieefa.org/resources/four-point-budget-proposal-boost-clean-energy-bangladesh/>;

c <https://www.tbsnews.net/bangladesh/energy/bangladesh-power-import-go-9000-mw-2041-state-minister-200311>;

d <https://documents1.worldbank.org/curated/en/099070523165030812/pdf/BOSIB0dbcaac870980b-8c101e1220b48f55>;

e <https://www.thedailystar.net/business/economy/news/solar-irrigation-pumps-prove-boon-farmers-3081556>;

f by 2025, SREDA intends to install 25,000 solar irrigation pumps with the potential to lower operating costs and reduce GHG emissions.



Policy Direction 3 Promote inclusive connectivity through green transport and logistics systems

Targeted logistics and connectivity infrastructure investment will strengthen the core of Bangladesh's logistics-sector modernization. Addressing current infrastructure gaps, which limit Bangladesh's ability to diversify its economy, would reduce spatial disparities, and support a greener growth path. The cost of doing this, however, is estimated at US\$ 608 billion by 2040. Annual infrastructure investment needs are estimated to be as high as 10 percent of GDP, of which transport infrastructure investment needs represent about half (Andrés et al. 2013). Major investment is needed to manage the rapid urbanization that increasingly hampers the quality of life and drains productivity and increases connectivity across areas. This will facilitate participation in local marketplaces while boosting digital infrastructure for the modern economy and making the energy sector more sustainable.

Enhancing internal connectivity will help in achieving inclusive growth in Bangladesh. Limited internal connectivity continues to constrain spatially equitable growth. While the government has taken several initiatives to promote equitable spatial development, economic integration between Bangladesh's periphery and its dominant economic centers in Dhaka and Chittagong remains limited.

Limited connectivity reduces market accessibility in peripheral areas, constraining their income growth and poverty reduction. It constrains, for example, the development of high-value agriculture and agri-processing, which can help the country develop other urban areas and the rural non-farm economy. It also slows the adoption of modern technology in agriculture and a dynamic non-agricultural sector.

Bangladesh has already begun developing a system-wide strategy for increasing logistics efficiency. While doing this, policymakers must ensure coordination between the public and private sectors. To this effect, action will be required to develop inclusive institutional arrangements, involving the private sector and service providers, such as logistics councils or committees to develop and implement logistics strategy.

Opportunities

- Strengthening sectoral governance will be key to modernizing the logistics sector. Whereas physical investment in infrastructure and technology is important to keep pace with the growing demand, sector governance needs to be strengthened concurrently to improve its efficiency, especially tackling the following challenges: (i) an outdated, complex regulatory landscape, combined with weak enforcement;

(ii) the lack of an integrated policy framework and fragmentation in sectoral governance, which hold back the development of more efficient multimodal transportation systems; and (iii) the dominant role of state-owned enterprises (SOEs), which lack technical and financial capacity to advance sector modernization and efficiency improvements.

- **Resilient urban, rural connectivity:** investment is also needed to reduce spatial disparities in access to social services and infrastructure and improve connectivity across regions and between rural and urban areas. Transport investment needs to strengthen connectivity across the country, particularly the center of the country with its periphery, and increase access to opportunities across areas. A multimodal resilient rural transport system could support spatial integration and help alleviate stress on large cities. Approximately 62 percent of rural households rely on the rural road-transport network, and around 25 percent depend on inland water transport.
- **Balanced intermodal connectivity:** Bangladesh is looking to prioritize the development of inland water transport and railways, which are currently underutilized. These options could be integrated into the existing transport system based on the changing traffic dynamics of the country.

- **Development of inland water transport:** under the BDP 2100, the government plans to improve the navigability of river routes through strategic dredging, river training, and establishing river-port infrastructure.
- **Revitalizing urban transport:** the priority focus of urban transport for the government is improving transport and traffic infrastructure to meet existing and potential demands, and developing an integrated, balanced system. Key initiatives that have been taken to accomplish this are the mass rapid transport (MRT) system in Dhaka and adjoining areas and planning bus transport systems to replace and augment the existing fleet of older buses.
- **Synchronizing urban mobility options:** the government plans to focus on not only motorized but non-motorized transport to achieve an integrated and balanced system for all modes. This could be achieved by introducing pedestrian roads, cycle lanes, and time-of-day usage in zones that experience heavy traffic congestion.

Recommendations

- **Boosting private sector participation in the sector:** to address the challenges presented above, policy priorities should include the development of an integrated multimodal transport and logistics master plan;

strengthening coordination mechanisms among relevant government agencies; opening the transport sector for greater private investment through PPPs and direct investment, including by foreign investors; and reducing the state's footprint.

- **Introducing private participation in the port sector and separating port oversight and operations** are especially important because around the world privately operated ports have demonstrated greater efficiency. A more efficient transport and logistics sector would significantly boost export growth; it is estimated that reducing congestion on the national highways would cut logistics costs as a share of sales by 0.5 percentage points and increase exports by 3.7 percent.
- **Strengthening regional connectivity with neighboring countries:** Bangladesh will gain significantly from strengthened regional connectivity in infrastructure. In addition to leveraging the potential regional power market, regional transport and digital-infrastructure connectivity would significantly benefit the country. Improving transport connectivity between Bangladesh and India could, for example, further increase exports, yielding a 297 percent increase in Bangladesh's exports to India and a 172 percent increase in India's exports to Bangladesh (Dappe and Kunaka 2021). In expanding the capacity of overall digital-infrastructure services, strengthening international connectivity is essential.

Regional connectivity projects such as the South Asia Subregional Economic Cooperation Program can further address the international connectivity issue.

Recommended action

- Improving logistics infrastructure, asset quality, capacity, and management is essential. To achieve this, encouraging private sector participation will be key, as well as the timely design and implementation of regulations. To encourage private sector participation, policy-makers should develop a robust and effective PPP framework; develop the domestic capital market; allow foreign financing of transport and logistics infrastructure; strengthen contract enforcement mechanisms; and implement the landlord-port model in Chattogram.
- Fiscal measures to encourage green growth in the logistics sector will need to ensure that the tax system treats all transport modes equally or tilt the field in favor of cleaner modes, such as inland waterways.
- Modernization of Bangladesh's logistics sector will require improving the quality and integration of logistics services through creating efficient market structures, a conducive business environment, and enforcing related regulations. A conducive business environment can be created by removing regulatory constraints limiting domestic and foreign private sector logistics services.

It will also be important to create a regulatory and business environment for logistics service providers to access bank finance and strengthen tax collection to create a level playing field for logistics service providers.

- Finally, to achieve seamless regional connectivity, it will be essential to negotiate and formalize integration agreements between neighboring countries and invest in the related infrastructure. To progress towards integration agreements, it will be key to conduct conformity assessments to determine gaps in regional and international commitments, assess the economic impacts of regional and international agreements, use international legal instruments to harmonize regulatory regimes and integrate customs and border management systems with neighboring states.

Critical implementation actors to be empowered

The initial key institutions involved in the above interventions could be the following. Note that the government would benefit from holding national consultations to refine the roles and responsibilities.

- Department of Environment (DoE);
- Dhaka South City Corporation;
- Dhaka North City Corporation;

- Chittagong City Corporation;
- Dhaka Transport Coordination Authority (DTCA);
- Sustainable and Renewable Energy Development Authority (SREDA);
- Power Division; Ministry of Power, Energy and Mineral Resources (MoPEMR);
- Bangladesh Road Transport Authority (BRTA);
- Roads and Highways Department (RHD) (Table 3.4).



Table 3.4 Indicative Targets for Proposed Major Green Indicators Relating to Transport and Connectivity

Parameters relating to transportation and connectivity	Predicted 2019	Predicted 2025	2030
Vehicle-emission standards	n.a.	4W and 2W	All categories
Modal shift from road to rail (passenger kms, billions) ^a	10	15	20
Inland water transport (IWT) for passenger transport (passenger kms, billions) ^a	16	23	30

Source: World Bank

Note:

n.a. = Not applicable. ^a Table 6.10: 8th FYP Transport Sector Targets

4W = four wheeled vehicles **2W** = two wheeled vehicles

Objective 2: Foster new growth engines and skills for green growth

The proposed Bangladesh Green-Growth Framework's second objective is to create new growth engines **on multiple fronts**. This includes developing green technology; greening brown industries; developing the blue economy; developing smart cities; smart management of natural capital; and fostering an inclusive society.

Greening industries: switching to green industries could be a major driver of sustainable industrial development worldwide. For the Bangladesh economy to target middle-income status by the end of this decade, its industries must transform into green ones by benefiting from technology upgrades and timely, short-term government intervention. The World Bank Bangladesh firm-level adoption of technology survey shows that Bangladeshi manufacturing firms with higher levels of managerial and technical human capital and a more educated workforce have significantly better technology levels. Yet, most manufacturing firms lack foundational skills, such as technical skills among workers.



Policy Direction 4

Invest in new green industries and human capital to promote job creation and green innovation

Shifting towards a more environmentally sustainable economy would trigger significant demand for green employment. In an eco-conscious economy, the system must embrace environmentally responsible practices, technology, goods, services, and business strategies to foster sustainable growth and address climate change (World Bank 2022a). This transformation reshapes the way industries operate, potentially leading to the emergence of new sectors. These changes result in fresh employment opportunities within green manufacturing and services, and existing sectors revamping their functions with eco-friendly approaches. These novel positions and those modified to incorporate greener practices collectively form what are referred to as green jobs. These play a pivotal role in safeguarding and promoting a sustainable environment across various industries, employing green techniques and technologies to reduce pollution and enhance resource efficiency (Figure 3.1).

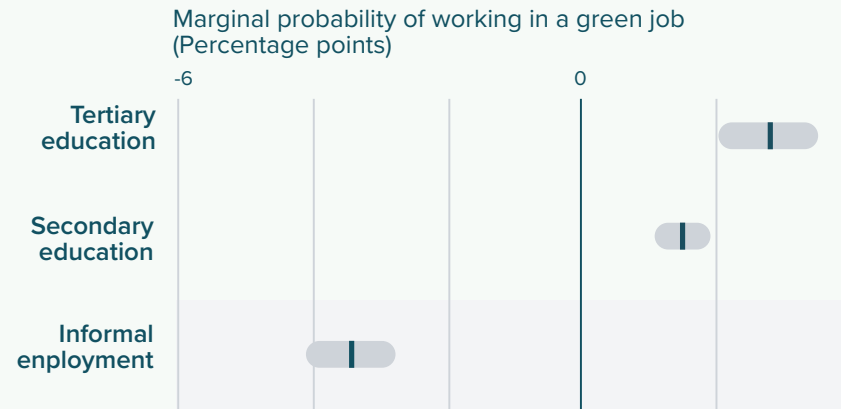
Bangladesh should invest in building infrastructure for green technology and industry development through green clusters, including in secondary cities, as integrated production bases for each green technology, along with targeted financing and incentive mechanisms.

Figure 3.1 (A) Share of Workers in Green and Pollution-intensive Jobs, Percent and (B) Marginal Probability of Working in Green Jobs by Level of Education, Percent

A. In most countries in South Asia, **percentage of workers in green jobs** ● is low compared to those in **pollution intensive jobs** ●



B. People with higher education have a higher probability of working in a green job



Notes:

A: Green jobs are those in occupations with a positive share of environmentally friendly tasks. Pollution-intensive jobs are those with above-median pollution intensity, as defined in Building Back a Greener Bangladesh (World Bank 2023). Labor force surveys are available for SAR: Hong Kong convention (2019), BGD: Bangladesh (2015); IND: India (2018); LKA: Sri Lanka (2019); MDV: Maldives (2019); NPL: Nepal (2017); and PAK: Pakistan (2018).

B. Marginal probabilities as estimated in probit. regressions of a dummy variable of being employed in a green job, conditional on being in an urban location, being aged 24–54 or 55 or older, having completed secondary or tertiary education, and being informally employed (World Bank 2023).

Opportunities in green industries

Promoting green technologies in industries, promotion of green jobs and SMEs: Bangladesh has one of the world's highest numbers of green RMG factories, resulting from the favorable monetary policies initiated by the government.

The prominent barriers to adopting green technologies in the RMG sector are large initial investment incentives favoring large companies that enjoy economies of scale, and limited commercial incentives from the demand side.

Introduction of a circular economy and extended producer responsibility: the circular economy is a model of production that emphasises resource conservation, eliminating waste, enhancing efficiency within the production chain, and improving the system's sustainability.

This model should be promoted in Bangladesh, especially in the RMG sector, to explore moving from a linear model of production, consumption, and disposal to a circular one, which aims to keep products and materials in use for as long as possible through repair, reuse, refurbishment, remanufacture and recycling. Implementing circularity can be catalyzed by adopting appropriate EPR policies.⁸

Diversification of the manufacturing industry and export base to insulate the economy from adverse developments associated with dependence on one single product group.

Restructuring of the industrial sector in a way that it creates more jobs as it grows, despite the ramifications of technological change and growing capital intensity of production associated with the ongoing Fourth Industrial Revolution (4IR).

Recommendations

The Government of Bangladesh should promote high employment-generating, low-emissions industries by supporting investment in textiles, light manufacturing, food processing, and leather production. In line with the 8th FYP, the government should encourage the growth of modern service sectors such as education, information technology enabled services (ITeS), banking, and healthcare.

The government should encourage the RMG and other sectors to switch to resource-efficient, circular models for increased resource efficiency, sustainability, and competitiveness. Transition to resource-efficient and competitive manufacturing can be supported by policies to leverage international connectivity for technology adoption.

Government can support the greening of micro, small and medium-sized enterprises (MSMEs) through green partnerships with large buyers and initiatives as a part of Bangladesh's Energy Efficiency and Conservation Master Plan (EECMP). The objective would be to enable MSMEs to provide green goods and services to large businesses, government, and export markets.

- Bangladesh could benefit greatly from encouraging the RMG and other sectors⁹ to switch to resource-efficient production and distribution models, and low-carbon technologies by using renewable sources of energy and process innovation to improve efficiency, sustainability, and competitiveness. Bangladesh can support the greening of MSMEs through green partnerships with large buyers and initiatives as a part of the EECMP. To transition to a circular economy, Bangladesh should devise a variety of policy instruments in stages, ranging from reducing waste generation, through the 3Rs (reduce, reuse, and recycle) and on to final waste disposal, in which material and energy are recovered, and waste is treated stably.
- The GHG emissions from livestock can be reduced by improving emissions intensity per product. The product yield of each animal can be increased by introducing higher quality feed and efficient processes. Emissions from the agricultural sector can be reduced by avoiding/minimizing food loss and waste across the food system through better integration of supply chains, access to finance and insurance, and temperature-controlled logistics and cold storage.

⁸ Extended producer responsibility (EPR) makes the manufacturer of the product responsible for its entire lifecycle including its take back, recycling and final disposal

⁹ Other sectors include chemicals, brick making, cement, food and beverages, steel re-rolling, plastic, and leather production

Opportunities for increasing human capital

Education as an engine for green growth.

According to a recent World Bank study, the education sector scored highest in estimations of number of jobs created from a US\$ 1 million investment against PM_{2.5} emissions that would be generated from that same investment. This highlighted the importance of this sector in creating opportunities for green jobs.

Improving the quality-of-service delivery in education also requires **better-targeted educational spending**. Currently, spending per student for primary and secondary education varies significantly across Bangladesh and is not correlated with attendance rates and internal efficiency indicators (Dev Bhatta et al. 2019). The adequacy of public spending for education must be addressed to reduce out-of-pocket expenditure by parents/students, while realigning spending with policy priorities and the closure of coverage gaps. This also requires ensuring more efficient planning, budget execution, and reporting processes, as well as effective monitoring of public spending outcomes, strengthening institutional capacity at the local level, and enhancing citizen participation and accountability.

Reforms to improve the quality of foundational skills and science, technology, engineering, and mathematics (STEM) skills are important in removing supply-side skill constraints.

Needed reforms include addressing the quality of teachers and the relevance of curriculums, particularly for women and girls. At the same time, industry must also shift to hiring relevant managerial skills—knowing which skills to hire, how to screen potential employees, and how to motivate them to perform well are all critical (Gu et al. 2021).

Digital literacy needs to be strengthened in Bangladesh at a broader level given the country's heavy dependence on low-skilled labor and remittances, especially as digital disruption of traditional sectors and occupations will make labor-intensive export-led manufacturing less feasible, potentially limiting job creation.

Figure 3.2 Workshop on Drone Application for Environmental Monitoring as part of the Building Back Greener Analytical Study Engagement



Source: World Bank (2023)

Recommended action

- The government, private enterprises, and NGOs could support apprenticeship programs for green technology specialists. Skills development requires (i) updating competency standards and curriculums to align with the transition away from fossil fuels; (ii) assessments for low-carbon technologies; (iii) workplace-based upskilling; (iv) skilling for climate migrants. Relevant industry skills councils could develop competency standards.
- The production of green guidelines for technical and vocational education and training (TVET) institutions; certification standards for green skills; targets in annual performance agreements with TVET institutions; and revising competency standards are needed.
- Skills programs should commit to closing gender gaps in training and STEM education. In basic education, environmental education could build awareness and a foundational knowledge of climate change. It could be established as a common core across the curriculum, including in teacher education.
- In addition to universities offering studies in environment and climate change, revolving funds for adaptive research and innovation for low-carbon technologies could be introduced.

The National Curriculum Policy Framework should include guidelines for climate change and environmental education, and green-skills competency standards could be developed under the Bangladesh Qualification Framework in partnership with relevant authorities.

- Given spatial disparities, targeted infrastructure and institutional capacity building should be undertaken in the education sectors to focus on the most underserved rural and slum areas. Investment must be made to improve physical infrastructure, electrification, information and communications technology (ICT) availability, teacher-to-student ratios, and the quality of education services.

Critical implementation actors to be empowered

The initial key institutions involved in the above interventions could be the following (note GOB will benefit from holding national consultations to refine the roles and responsibilities):

- Sustainable and Renewable Energy Development Authority (SREDA), Power Division, Ministry of Power, Energy and Mineral Resources (MoPEMR);
- Ministry of Environment, Forest and Climate Change (MoEFCC);

- Board of Investments and Bangladesh Export Processing Zone Authority (BEPZA);
- Bangladesh Small and Cottage Industries Corporation (BSCIC);
- Bangladesh Standards and Testing Institution (BSTI);
- Ministry of Agriculture (MoA);
- Ministry of Labor and Employment (MoLE);
- Ministry of Industries (MoI);
- Ministry of Finance (MoF);
- Bangladesh Bank (BB);
- Financial Institutions Division (FID);
- Information and Communications Technology Division (ICTD);
- Bangladesh Tourism Board (BTB); and
- Ministry of Disaster Management and Relief (MoDMR)/Department of Disaster Management (DDM), Ministry of Social Welfare (MoSW)/Department of Social Services (DSS). (See table 3.5 next page.)

 **Table 3.5** Indicative Targets for Proposed Major Green Indicators Relating to Green Industries and Jobs

Parameter relating to the growth of green industries	Observed 2019	Predicted 2025	2030
Employment in green jobs (% of total employment) ^a	—	6%	10%
R&D expenditure (% of GDP) ^b	0.3%	1.5%	2.5%
Leadership in Energy and Environmental Design (LEED) certification of strategic export industries (% coverage) ^c	—	50%	100%
GHG emissions from livestock and agriculture (MtCO ₂ e/year) ^c	54.64	30	1.04

Source: World Bank

Note: — Not available.

a the International Labour Organization (ILO) had estimated green jobs to be 2 percent of total employment in 2010;

b <https://www.tbsnews.net/feature/panorama/bangladesh-lags-rd-will-increased-monetary-allocation-bring-change-185614>; Mujib Climate Prosperity Plan 2022–2041;

c Nationally Determined Contributions (NDC) 2021. Government of Bangladesh



Policy Direction 5 Promote livable green cities through urban regeneration and new smart cities

Green urban planning, the greening of buildings, and green transportation can significantly address the issues of clean air, urban flooding, and urban heat islands. Transport and construction are among the leading sources of air pollution in Bangladesh's cities (World Bank 2023). Rapid urbanization in Bangladesh has increased transport demand, leading to severe road congestion and deterioration in urban environments. The impact of such rapid growth has major consequences on the ability of the transport sector to provide mobility for all people as they seek to take advantage of employment, education, health, and social opportunities. The declining quality of the urban environment has also caused irreparable damage to natural ecosystems in cities and surrounding areas. With some 400,000 new residents each year from rural areas seeking a better life, Dhaka is straining under the pressure of its rapidly swelling population.

Smart cities have adopted technical and information platforms to better manage their resources; improve administrative processes; monitor developments; develop new business models; provide basic services; and help citizens make informed decisions about the use of resources. Bangladesh could adopt the ambitious objectives of making cities green, resilient, competitive, and inclusive while planning smart city development in parallel.

Opportunities

Investing in climate-smart cities: under the NAP, the Government of Bangladesh aims to develop climate-smart cities reinforced with robust urban drainage networks and water management infrastructure; expanded green infrastructure; effective solid waste and renewable energy mechanisms; and improved human health through the provision of safe drinking water, sanitation, and hygiene. For urban areas, priority entry points should include solving urban drainage problems, thereby increasing the resilience of urban communities, especially the poor and slum dwellers; urban environmental conservation; youth-led urban wetlands management and improvement in human wellbeing; controlling unplanned urbanization and deforestation; and reducing urban heat island effects by improving urban green and blue infrastructures. Furthermore, the declining quality of the urban environment can also cause irreparable damage to natural ecosystems in cities and surrounding areas.

Recommendations


- Bangladesh would benefit from implementing the green building policy and related guidelines of the Bangladesh National Building Code (BNBC), the Building Energy Efficiency and Environment Rating System (BEEER) and reporting requirements, and incentivizing builders and developers to construct green, affordable, and resilient housing units.

- To decongest and reduce the load on Dhaka's and Chattogram's infrastructure and environment, Bangladesh could develop secondary smart cities with green infrastructure, services, innovation, human capital, good governance, and strong enabling environments to make them attractive for investment.
- In the pilot phase, Bangladesh should invest in city-level diagnostics for identifying key urban development challenges in governance, transportation, environment, energy, solid waste management, disaster management, and water management.
- Bangladesh could strengthen the implementation of smart-city projects by establishing legal foundations for smart cities.
- Bangladesh should strengthen enablers of smart-city innovation such as technology R&D, financing mechanisms, businesses, institutions, etc.
- Urban afforestation measures, such as designing green spaces and installing street trees, should be pursued.
- Bangladesh should leverage international cooperation to pilot smart cities.

Critical implementation actors to be empowered

The initial key institutions involved in the above interventions could be the following. Note that the government would benefit from holding national consultations to refine the roles and responsibilities.

- Ministry of Science and Technology (MoST);
- Local Government Division (LGD);
- Information and Communication Technology Division (ICTD);
- Dhaka Chamber of Commerce and Industry (DCCI);
- Organizations in the ICT sector; and
- IT experts and urban planners. (Table 3.7)

 **Table 3.7** Indicative Targets for Proposed Major Green Indicators Relating to the Development of Smart Cities

Parameter relating to development of smart cities	Observed 2019	Predicted 2025	2030
Smart cities ^a (Nos.)	0	0	3
Green urban spaces (% of total urban area)	2 ^b	10	20

Source: World Bank

Note: a Bangladesh Smart City Development Project, Asian Infrastructure Investment Bank (AIIB)

b Nawar et al. 2022.



Policy Direction 6
Stimulate productive agriculture, promote the blue economy, strengthen coastal resilience, and sustainably manage natural capital

Need for productive agriculture

The contribution of agriculture to Bangladesh's GDP is 14 percent, and it employs more than 40 percent of the workforce (GED 2020a). Changing climate and adverse effects pose significant challenges to agriculture, food security, and livelihoods. Agriculture remains the largest employment sector, providing 20 percent direct and 50 percent part-time employment opportunities in 2021–22. With the targeted increase in milk production of 65 percent, meat by 13 percent, and eggs by 30 percent by 2024–25 in the 8th FYP, agriculture continues to offer more opportunities for economic empowerment.

Bangladesh's industrial and agricultural sectors are major contributors to the economy and key employment providers. Over the years, these sectors have advanced in an unsustainable manner, threatening their future growth. Under a business-as-usual scenario, it is projected that the agricultural sector will stagnate and key national production targets for 2040 will likely be missed unless action is taken. Investing in a low-carbon and climate-smart transformation of the agricultural sector can provide many economic opportunities and environmental benefits.

Opportunities for productive agriculture

- Bangladesh should make efforts towards arresting (and reversing) the degradation of natural capital. Efforts should be targeted towards ICT-based monitoring of natural-capital stocks and the involvement of indigenous communities in conservation efforts through awareness raising, capacity building, and alternate livelihood options.
- Realizing that the growth potential of the agricultural, livestock, and fisheries sector depends on increased commercialization and widespread adoption of climate-smart agricultural methods, diversifying agricultural production will boost resilience to climate change and encourage growth.

Recommendations for productive agriculture

- **Investment in research and innovation in the agricultural sector:** through the Bangladesh Agricultural Research Council Act (2012) and funding support such as the Integrated Agriculture Productivity Project (IAPP), there has been a substantial focus on enhancing agricultural productivity.

- Further, reducing environmental footprints requires the scaling up of such measures as (a) adaptive cropping patterns and intercropping, crop diversification, integrated rice-fish farming and pond fish production; (b) sustainable nutrient management practices, including zero budget natural farming; (c) low emission rice production methods such as alternate wetting and drying; (d) innovative local practices such as floating-bed cultivation on water bodies; and (e) improved irrigation efficiency and water storage. Development and introduction of salt-tolerant and drought-resistant rice varieties also need to be scaled up to increase the climate resilience of rice production systems (World Bank 2023c). Strengthening of the research institutions such as Bangladesh Fisheries Research Institute, Bangladesh Agricultural Research Institute, and Bangladesh Agricultural University will foster the path to green growth.
- **Investment in technological interventions in the agricultural sector:** small-scale mechanization has been quite successful in Bangladesh, and investment and interventions to facilitate technological developments will aid green growth. Investment in synergies between livestock growth and agriculture can effectively reduce the GHG footprints by 16–30 percent, corresponding to annual reductions of 2.47–5.39 MtCO₂, respectively. The National Agriculture Technology Program (NATP-II) of the World Bank has been targeting

smallholders and women’s participation in agriculture by enhancing agricultural technology generation¹⁰. Investment in improving feeds, scientific cattle fattening, breeding, waste to energy, and health support systems will help diversify livelihoods. Investment in ICT for better outreach to end users and as a support system will help achieve the targeted goals of green growth.

- **Increasing access to credit and insurance in the agriculture sector:** Bangladesh has a dedicated credit mechanism for agriculture-related activities through two specialized agriculture development banks, Bangladesh Krishi Bank and Rajshahi Krishi Unnayan Bank, in addition to several state-owned commercial banks—Sonali, Janata, Agrani, and Rupali. Despite the government’s Agricultural and Rural Credit Policy¹¹, many farmers still have limited access to credit and other financial services, and report that procedures are burdensome. To facilitate green growth, co-operative finance mechanisms, improved loan procedures and agricultural extension agents may prove to be instrumental in supporting the financing processes for agriculture. Sustainable market-based agricultural insurance also needs to be popularized among small and marginal farmers in Bangladesh.

¹⁰ <https://projects.worldbank.org/en/projects-operations/project-detail/P149553>

¹¹ <https://www.bb.org.bd/en/index.php/publication/publication/0/45>

- **Institutional capacity building for social inclusion:** most agricultural workers in Bangladesh have only a primary level of education, and only 34 per cent of the fishermen have received formal training in fish farming (Pravakar et al. 2013). The government is supporting the poor and extremely poor with livelihood support, basic agricultural training, and skills building through the Nuton Jibon Livelihood Improvement Project (NJLIP).¹²

Technical training at multiple levels and training of trainers and other stakeholders on high-yielding cultivation procedures, post-harvest technologies, value-adding products, and marketing will help build capacity and create additional livelihood opportunities for skilled workers. Capacity building of self-help groups or co-operatives for branding and marketing agri-products, such as milk co-operatives and canned fish products, will create a steady source of income for communities. Inclusive and equal earning opportunities for women and supporting women’s access to financial and other resources such as land, labor, and water will ensure benefits from economic diversification across a wide range of sectors and skill levels.

¹² <https://projects.worldbank.org/en/projects-operations/project-detail/P149605>

Critical implementation actors to be empowered

The initial key institutions could be the following. Note that the government would benefit from holding national consultations to refine the roles and responsibilities.

- Center for Environmental and Geographic Information Services (CEGIS);
- Ministry of Environment, Forest and Climate Change (MoEFCC);
- Ministry of Agriculture (MoA);
- Bangladesh Agriculture Research Institute (BARI);
- Bangladesh Livestock Research Institute (BLRI);
- Department of Agricultural Extension (DAE);
- Department of Agricultural Marketing (DAM);
- Department of Livestock Services (DLS).

Promote the blue economy, strengthening coastal resilience

As many as 30 million people depend on Bangladesh's blue economy, which contributed an estimated US\$ 6.2 billion in gross value added in 2015 (Patil et al. 2018). According to the Changing Wealth of Nations 2021 report (World Bank 2021), Bangladesh's natural capital was estimated at US\$ 197 billion in 2018, representing 6.3 percent of

Bangladesh's total wealth of US\$ 3.1 trillion.¹³ In contrast, the natural capital share of total wealth in LMI countries averages 12.6 percent, underscoring Bangladesh's relative paucity of natural resources.

Nevertheless, natural capital in Bangladesh is of tremendous importance for the population's food security—agriculture, fisheries, and livestock; household energy; and coastal protection against natural disasters. Approximately 270,000 households depend directly and indirectly on marine fisheries for their livelihoods.

Conservation and afforestation activities in the Sundarbans have increased resilience against flooding and climate shocks, and augmented the opportunities for fish production by providing the nursery grounds for both brackish and marine species that are important to the fishing industry.

Opportunities for the blue economy

- The government could draw upon existing forecasting models of the national economy and run ocean economic development scenarios to estimate the economic benefits to Bangladesh from various pathways for developing the ocean economy and identify the policy reforms needed to get there. Furthermore, there is a dire need for

more research-oriented investment in the development of climate-resilient fish varieties (salinity-tolerant, short-duration, and/or high-yielding), and export quality fisheries such as hilsa, shrimps and tilapia.

- In 2021–21, 74,000 tonnes of fish and fish products were exported, amounting to Tk 5,191 crore (approximately US\$ 471 million). Bangladesh is the topmost hilsa-producing country, contributing 12.22 percent of the total fish production.¹⁴
- Black tiger shrimp or bagda (*Penaeus monodon*) are Bangladesh's second largest export item, after RMGs, providing employment opportunities for around 1.2 million people on shrimp farms and processing units, of which more than 20,000 are women.
- Future growth in the blue economy will be driven by fisheries including mariculture, shipbuilding, coastal and maritime tourism, and coastal and offshore wind generation. Much of Bangladesh's blue economy potential is untapped, but investment and capacity development could steer needed progress.

¹³ Total wealth is the sum of natural, produced, and human capital, adjusted for net foreign assets

¹⁴ <https://www.sciencedirect.com/science/article/pii/S2468550X20300010?via%3Dihub>

Recommendations for the blue economy

- The effectiveness of institutional mechanisms to coordinate policy planning and implementation across key ministries involved in the blue economy will lower transaction costs and ultimately enhance the investment climate. Those key ministries and departments here are the MoEFCC; MoFL; the Department of Fisheries (DoF); the MoPEMR; the Ministry of Shipping (MoS); and the Ministry of Civil Aviation and Tourism (MoCAT) Bangladesh should improve fisheries-management systems, infrastructure, value-chain investments, and certification; encourage private-sector investment to increase the availability and quality of sea fish; and comply with global export-market regulations.
- Bangladesh should invest in developing systems to measure and monitor the performance of its ocean economy along targeted development pathways, such as conducting regular public expenditure reviews of key sectors in the blue economy to enhance budget allocation; piloting marine spatial planning to address upstream environmental and social issues; allocating the spatial and temporal distribution of marine activities and investments; continuing stock assessments of marine fisheries and promoting the sustainable capture of marine fish, especially tuna and other pelagic fish, using advanced ICT and satellite-based navigation technologies.
- Regional cooperation between the Indian Ocean Rim Association (IORA) and the Bay of Bengal economies will be critical to sustaining the blue economy's benefits through coordinated and joint marine-resources management, foreign direct investment, knowledge exchange in emerging technologies and industries, and enhanced maritime connectivity.
- **Investment in supportive infrastructure and market assistance:** augmentation of existing agri-logistics and support for expanding market infrastructure and private sector partnerships (market hubs, warehouses, cool chains, etc.) is required. This involves establishing small-scale/cottage units for post-harvest technologies such as rice mills, cold storage, and units for adding value such as extracting essential oil from betel leaves. For fisheries, shore-based infrastructure is required for appropriate fish handling, processing, preservation, transportation, distribution, and marketing systems. Enhanced resource-use efficiencies such as the use of solar fish dryers, the availability of fish-waste disposal systems in landing centers and fishing harbours, and laboratory facilities should be promoted in green growth. The required skills in preparing value-added products and marketing should be developed in prospective youth and women through employment opportunities.

Critical implementation actors to be empowered

The initial key institutions involved in the above interventions could be the following. Note that the government would benefit from holding national consultations to refine roles and responsibilities.

- Center for Environmental and Geographic Information Services (CEGIS);
- Bangladesh Forest Department (BFD);
- Ministry of Environment, Forest and Climate Change (MoEFCC);
- Department of Fisheries (DoF);
- Ministry of Fisheries and Livestock, (MoFL);
- Ministry of Agriculture (MoA); and
- Proposed new agency for the blue economy.¹⁵ (Table 3.9)

¹⁵ <https://www.icsf.net/newss/bangladesh-blue-economy-ministry-proposed-to-tap-potential/>

Box 3.3

Accelerating the Blue Economy in Smart Delta Cities

Bangladesh's strategic development plans for 2021–2025 hinge on key policy documents, including the Delta Plan 2100, the Perspective Plan 2041, and the 8th FYP, all of which converge on the pursuit of sustainable development while safeguarding the environment and human wellbeing.

Bangladesh, confronted as it is by geographical vulnerability, including natural disasters, poverty, and resource constraints, places significant emphasis on coastal development, with developing the blue economy as a core approach. The blue economy advocates the sustainable use of ocean resources, encompassing coastal management, tourism, shipping, renewable energy, fisheries, and more, to generate jobs, foster economic growth, and ensure ocean ecosystem health. This approach has become a priority in the 8th FYP, calling for a comprehensive policy framework covering sustainable fisheries, maritime connectivity, offshore energy exploration, marine biodiversity preservation, and coastal resilience.

With Bangladesh's extensive 720 km coastline offering substantial potential for a blue economy initiative, recent developments on the southeastern coast, such as the Mirsharai Economic Zone, Matarbari Coal Power Plant, Matarbari Deep Sea Port, Dohazari-Cox's Bazar Rail line, and Sonadia Ecotourism, have made the area ripe for further infrastructure enhancement.

A considerable influx of approximately 123,800 people is expected in the southeastern coastal region over the next five years, necessitating prudent urban planning to accommodate this growth. The establishment of a smart delta city, encompassing Matarbari,

Chakaria, and Cox's Bazar, presents an opportunity to create a nationally significant, eco-friendly waterfront city under the green-growth investment priority. This smart delta city would serve as a center for the blue economy, offering residents and visitors a unique blend of eco-tourism, outdoor activities, marine fisheries, aquaculture, and high-value goods and services.

The proposed approach involves crafting a comprehensive master plan, emphasizing smart-city components such as mobility, safety, utility, environment, and energy, with active public participation in the planning process. The plan aims to harmonize urban life, including vibrant neighborhoods, robust cultural and economic activities, and excellent access to recreation and public transport, ultimately enhancing the quality of life for residents and visitors alike.

The roadmap includes defining geographic boundaries, conducting environmental impact studies, and soliciting input from stakeholders. Feasibility studies will assess the technical, economic, legal, and operational viability of the master plan. A financing plan will be crucial, involving domestic and international resources, while a special-purpose corporation (SPC) under the Prime Minister's Office's direct supervision will facilitate implementation.

Financing these smart delta cities demands a combination of international climate finance, PPPs, domestic resources, green bonds, and development assistance, enabling Bangladesh to enhance climate resilience and promote sustainable development for future generations.

Leveraging Natural Capital through Sustainable Management

Opportunities for leveraging natural capital through sustainable management

- Sustainable landscape management through integrated land-use planning should be carried out using geo-modeling and consultative processes, with the multiple goals of conservation; sustainable, productive use of natural resources; increased adaptation to climate change, and promotion of livelihoods.
- Bangladesh would benefit from leveraging climate-smart agriculture (CSA) and NbS as green growth engines by introducing ecosystem-based solutions to land degradation and climate change vulnerability. Agricultural resilience to hotter, wetter conditions, safeguarding coastal areas, and expanding NbS will facilitate more equitable development by reducing rural stress and coastal erosion. The following NbS options can contribute to increased adaptation: (a) strengthening and expanding the coverage of submersible embankment systems to protect against wave erosion; (b) creating a sustain-

able sediment-management mechanism to enhance river and wetland systems; and (c) ecosystem-based adaptation, for example, establishing green belts.

Recommendations for leveraging natural capital through sustainable management

- In coastal areas and riversides, protect and restore mangroves and forests to reduce storm surges, floods, and landslide impacts, and build embankments for protection from wave erosion; as well as harvest rainwater, including introducing options such as rooftop tanks, to reduce water stress.
- Bangladesh should promote ecotourism/nature-based tourism by providing financial assistance, sustainable infrastructure, and adequate training and certification, starting with further advancements in developing sustainable ecotourism in Rangamati, Bandarban, and Khagrachari.



Box 3.4

Drones for Green Growth

Drone imaging, which is easy to deploy with a few, trained people, offers more precise data for smaller-scale pin-point studies. It creates tangible skills that can be applied in green jobs across multi-disciplinary data-collection activities. In light of these benefits, drone operating capacity is a disruptive technology for a data-hungry community of specialists for various applications and fields of government.

The traditional method of water-quality data collection is both time consuming and labor intensive, and only captures a limited number of samples from easy-to-reach sites. Unmanned surface vehicles can, however, capture eight general parameters automatically over a pre-planned location. Drones can also create high-resolution, seamless digital-terrain models of river channels and their floodplains by combining orthographic production from low-altitude unmanned aerial-vehicle photography-based methods to create a digital bathymetric model of riverbanks. Mobile laser scanning and unmanned aerial-vehicle-based photogrammetry point clouds can be examined against terrestrial laser scanning and combined with an optical bathymetric model to create a seamless digital-terrain model of two different measurement periods. The 3D output model is useful for flooding assessment, river morphology studies, land reclamation, dredging work, etc.

Source: Hojung Solutions (2022)



Table 3.9 Indicative Targets for Proposed Major Green Indicators Relating to Agriculture, the Blue Economy, and Natural Capital

Parameters relating to productive agriculture, the Blue Economy, and Natural Capital	Observed 2019	Predicted 2025	2030
Emissions intensity of rice production ^a (average kg of CO ₂ e per kg of production)	0.7	0.5	0.35
GDP added by blue economy sectors ^b (US\$ billions)	6.2	10	16.1
Employment in blue economy sectors ^c (Millions)	30	40	45
Share of certified environmentally friendly agricultural products produced (%)	–	4.5	10
Share of certified environmentally friendly fisheries products produced (%)	–	4.5	10
Ecotourism sites in Bangladesh (Nos.)	0	3	5

Source: World Bank

Note: — Not available.

a FAO (2017)

b Patil et al. (2019)

Objective 3: Achieve a just transition, enabling a resilient, green, and healthy society

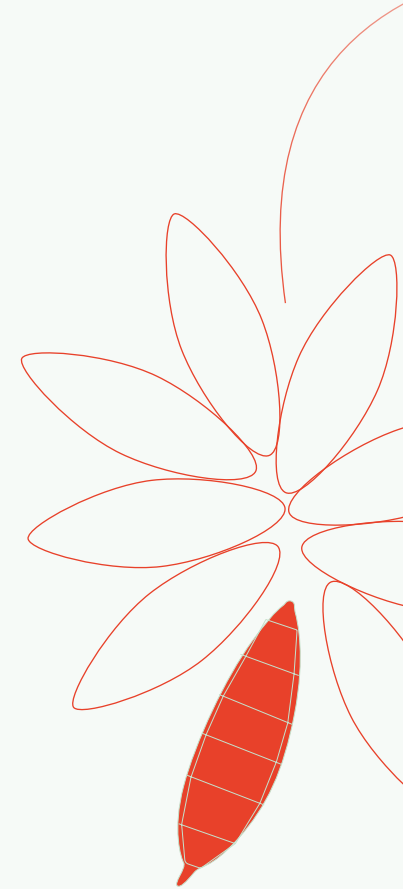
The third objective of the proposed Bangladesh Green-growth Framework is to raise the overall quality of life for Bangladesh's people and enhance contributions to the international community through strong advocacy for green growth. Efforts will be directed toward building resilience to climate change through ecosystem-based approaches to adaptation. Interventions will be directed towards stricter pollution controls aimed at improving public health.



Policy Direction 7

Strengthen social protection and the capacity of citizens to adapt to an inclusive climate-resilient economy

As one of the countries most vulnerable to climate change, managing climate risks has been a central issue in Bangladesh's development. Investing in adaptation is a priority in the government's climate change strategy. A total of 353,332 km of rural roads and 24,000 km of waterways are highly impacted by flooding, resulting in a 15–40 percent increase in travel and trade costs. By 2050, a further 7 percent of roads will be exposed to additional flooding compared to 2013. An estimated 87 percent of these roads will be inundated by up to 0.5 meters, and more than 2 percent by more than a meter. During each flood, freight-truck costs tend to increase by as much as 138 percent in the west of the country, and 142 percent in the east within the business-as-usual scenario. By 2050, more than 600 km of railway track, approximately 20 percent of the current network, will likely be inundated by up to 0.5 meters. To address this, an estimated US\$ 2,671 million of climate-resilient investment in the land transport infrastructure is essential by 2050 (Dasgupta et al. 2010). Strategic planning and spatial vulnerability analyses at the network level must identify the most critical and exposed transport assets and address resilience and redundancy by shifting development away from



vulnerable zones and upgrading the network to higher climate-resilient standards. Revised design and construction practices for new construction should incorporate resilient engineering standards, including landscape approaches, water management, and innovative materials, especially for unpaved roads at higher risk of damage and low-volume roads. Adopting a climate-smart asset management approach for managing the rural road and waterway network is necessary with funding to maintain the most vulnerable assets. Finally, strengthening institutional coordination mechanisms and protocols for emergency repairs during and in the immediate aftermath of climatic events is needed.

- Bangladesh can enhance its disaster preparedness by (a) improving the accuracy and lead times of disaster forecasts, (b) strengthening the Bangladesh Meteorological Department's (BMD) hardware and ICT infrastructure for enhanced data and information sharing through resilient network systems, and (c) strengthening the observation network for tropical cyclone monitoring with automated tide gauges and equipment for oceanographic and meteorological observations.
- Bangladesh can prioritize investments in strengthening the BMD's institutional and technical capacities and enabling better collaboration and coordination between BMD and key agencies such as the Bangladesh Water Development Board (BWDB), the Regional

Integrated Multi-Hazard Early Warning System, the Indian Meteorological Department, Japan's International Cooperation Agency, the Norwegian Meteorological Institute, local urban bodies, and the DDM (World Bank 2018).

- To implement the BDP 2100, Bangladesh should undertake (a) tax reforms, (b) reforms in city corporations and municipalities for cost recovery in the urban water supply, and (c) the establishment of effective water-user associations (WUAs) in rural areas. In line with the 8th FYP, Bangladesh should prioritize (a) operationalizing the Delta Wing within the General Economics Division, (b) operationalizing the Delta fund and its accompanying institutional arrangement, (c) establishing the Delta Knowledge Hub for hosting and offering intellectual support, and (d) collaborating multilaterally with development partners and other riparian countries.
- Bangladesh can strengthen disaster recovery programs that can strengthen resilience by (a) integrating gender aspects into social welfare programs, (b) transitioning in-kind social protection programs to cash-based programs, and (c) increasing coordination with the MoSW to improve efficiency across multiple social welfare programs.

Critical implementation actors to be empowered

The initial key institutions involved in the above interventions could be the following. The government would benefit from holding national consultations to refine the roles and responsibilities.

- Center for Environmental and Geographic Information Services (CEGIS);
- Ministry of Environment, Forest and Climate Change (MoEFCC);
- Bangladesh Water Development Board (BWDB);
- Ministry of Social Welfare (MoSW);
- city corporations and municipalities;
- Bangladesh Meteorological Department (BMD);
- Ministry of Disaster Management and Relief (MoDMR); and
- Delta Wing (proposed). (Table 3.10)

Table 3.10 Indicative Targets for Proposed Major Green Indicators Relating to Strengthening Climate Adaptation and Resilience

Parameters relating to climate adaptation/resilience	Observed 2019	Predicted 2025	2030
Improved capacity for forecasting ^a	BMD: forecast verification baseline developed; BWDB: verification not yet established	Improvement in forecasts by at least one attribute (skill/lead time/frequency/spatial range)	Improvement in forecasts by all attributes (skill/lead time/frequency/spatial range)
Upgraded and modernized hydromet related network established (%) ^b	0	60	70
Disaster risk reduction and management readiness (% of population) ^c	—	50	80

Source: World Bank

Note:

— Not available.

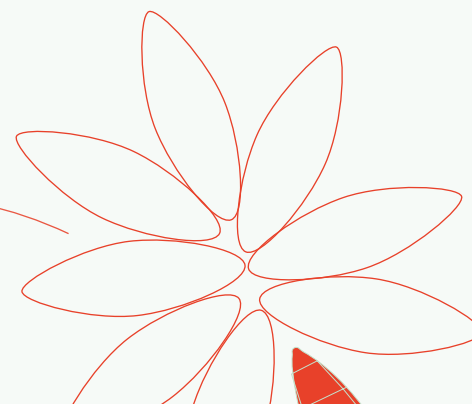
a,b Bangladesh Weather and Climate Services Regional Project - P150220;

c Bangladesh 8th FYP



Policy Direction 8
Improve public health and wellbeing through a cleaner environment

Bangladesh was ranked as the most polluted country in the world and Dhaka as the second most polluted city each year between 2018 and 2021. Air pollution was deemed the second largest risk leading to death and disability in Bangladesh in 2019, with four of the country's top five causes of deaths being directly associated with exposure to air pollution (World Bank 2022b). An estimated 78,000–88,000 deaths and 1–1.1 billion days lived with illness in Bangladesh in 2019 were attributable to ambient air pollution. This translates into economic losses, estimated at 3.9–4.4 percent of the country's GDP during that year. Exposure to air pollutants is significantly associated with elevated risks of physical health conditions such as coughs, breathing difficulties, and lower-respiratory-tract infections. A 1 percent increase in exposure to PM_{2.5} above the World Health Organization (WHO) air-quality guidelines (WHO 2021), for instance, is associated with a 12.8 percent increase in the likelihood of people experiencing breathing difficulties, 12.5 percent higher probability of having a wet cough, and 8.1 percent higher likelihood of experiencing lower-respiratory-tract infection.



The Government of Bangladesh's Vision 2041 aims for Bangladesh to become a UMIC country by 2031 and a developed country by 2041. Vision 2041 includes achieving annual ambient PM_{2.5} of 10 microgram per cubic meter (µg/m³) by 2041 (GoB 2020). By simultaneously reaching the ambient air quality target of 10 µg/m³ and 100 percent clean cooking in 2041, as much as 86 percent of Bangladesh's PM_{2.5} deaths could be averted (World Bank 2023 forthcoming).

To achieve these targets, Bangladesh will have to improve its environmental governance to safeguard a green, resilient, and inclusive recovery of its economy. Improving the DoE's capacity to enforce upstream regulation—such as wastewater treatment standards or types of energy used within industries—is key to addressing negative externalities.

- Bangladesh could undertake efforts targeted at the development of regulations and policies to expand the DoE's regulatory mandate from controlling individual sources of pollution to protecting and improving environmental quality and promoting green growth.
- Bangladesh should promote the public disclosure of key environmental indicators, such as water quality and real-time air-pollution levels by area.

- Bangladesh should allocate resources to establish an environment fund that could help mobilize sustainable financing for environmental conservation action such as policy studies, R&D and technology pilots, and citizen engagement.
- Fiscal policies should adopt the beneficiary-pays and polluter-pays principles to address air and water pollution.
- The Dhaka Rivers Ecological Restoration Project should continue to be implemented to improve water flows in the rivers and canals and enhance domestic wastewater management around Dhaka City.

Opportunities

- Priorities for control measures to reduce ambient and household air pollution include the following: (i) eliminate the burning of agricultural residue and solid waste; (ii) improve management of agricultural fertilizers and livestock manure; (iii) control emissions from industry and the power sector; (iv) substitute household use of solid fuel for cooking by switching to liquid petroleum gas (LPG) or electricity; and (v) collaborate with neighboring countries to address transnational PM_{2.5} pollution.

The most effective intervention to improve ambient PM_{2.5} pollution in Bangladesh is the reduction or elimination of solid fuel for cooking by households, switching to LPG or electricity, which has the added benefit of reducing the health impacts of household air pollution. Other priorities for household air pollution control measures are to (a) further assess the potential for promoting the use of electric stoves for cooking, and perhaps especially induction stoves, a cheaper option than LPG for small users of electricity that can benefit from lower residential block-tariff rates for electricity, and (b) further assess price and non-price obstacles and incentives for the adoption of LPG for cooking.

Recommendations

- Interventions for addressing microbiological pollution that should be prioritized are (i) household point-of-use treatment of drinking water with ceramic filters; (ii) safely managed, improved, non-shared sanitation for households currently with unimproved sanitation; and (iii) the promotion of hand washing with soap, targeting caregivers of children under five. Further measures that should follow are (iv) safely managed, improved, non-shared sanitation for households currently sharing sanitation with other households, and (v) promoting hand washing with soap to all household members.

For mitigation exposure to arsenic in drinking water, three control interventions should be prioritized: (a) tube wells; (b) ponds with sand filtration, and (c) use of household point-of-use filters, such as SONO filter that uses iron and sand filtration, for drinking water.

Critical implementation actors to be empowered

The initial key institutions involved in the above interventions could be the following. The government would benefit from holding national consultations to refine the roles and responsibilities.

- Department of Environment (DoE), Ministry of Environment, Forest and Climate Change (MoEFCC);
- Ministry of Science and Technology (MoST); and
- Ministry of Health and Family Welfare (MoHFW). (Table 3.11)



Table 3.11 Indicative Targets for Proposed Major Green Indicators Relating to Public Health and Environmental Pollution

Parameters relating to public health and environmental pollution	Observed 2019	Predicted 2025	2030
Air quality (annual average, PM _{2.5} µg/m ³) ^a	86	60	—
Urban water bodies compliance with water quality standards (%) ^b	0	50	—
Application of the polluter-pays principle (% of cases) ^c	0	40	—

Source: World Bank

Note:

— Not available.

a,b,c Bangladesh 8th FYP



Policy Direction 9 Enhance engagement and cooperation with the international community on climate change

Bangladesh has led climate action, particularly amongst LMI and climate-vulnerable countries. As the Chair of the Climate Vulnerable Forum (CVF) and the Vulnerable 20 countries (V20), Bangladesh has promoted the interests of climate-vulnerable countries. The Global Center on Adaptation's (GCA) South Asia regional office in Dhaka shares best practices and adaptation knowledge with other climate-vulnerable countries.

In the 8th FYP, a major policy direction is to substantially enhance the public spending on R&D, which can support greater international and domestic solutions in response to climate change. While the private sector is the main source of R&D spending at the enterprise level, innovation is mostly a public good and requires public funding. Research grants to top universities on specific areas of development interest can be a great facilitator of innovation. Linking this research to the agricultural and industrial sectors can also leverage public resources with private funding. Presently, the government spends a mere 0.15 percent of GDP on R&D; the 8th FYP envisages this reaching 1 percent of GDP by 2025, and 3 percent by 2030 and maintained thereafter.

Recommendations

Solutions for Bangladesh requires R&D: while benchmarking other examples is important, adapting to and fitting the Bangladesh market context will require R&D, which can play a key role as a growth engine and has immense potential to steer development towards green growth. Implemented correctly, investment and regulations around R&D can foster technological development, process improvements, and human-capacity development. As a first step towards building an efficient system for green-technology innovation, Bangladesh should develop mechanisms for prioritizing R&D investment in green technologies and products with the greatest impact, manufacturing-capacity synergies, value addition, and job creation.

Bangladesh could develop a mechanism linking its academic, industrial, and research sectors involved in green R&D. This would also energize R&D investment, boost efficiency, build competence in human resources, and help establish a world-class green-technology information structure, including a testing and certification system. Activities can include international collaboration to support R&D on green technology by engaging international and domestic experts and capacity building for national experts.

- Bangladesh should invest in building infrastructure for green technology and industry development through green clusters, including

in secondary cities, as integrated production bases for each green technology, along with targeted financing and incentive mechanisms.

- Based on the level of domestic technology development, Bangladesh should support market activation and commercialization of green technologies.
- Bangladesh could actively engage in international negotiations on climate change and make contributions by playing a constructive role in building an effective global climate regime.
- The Government of Bangladesh should build partnerships with countries for technology transfers, technical assistance programs, and trade deals for green products and services to boost its green economy.
- Bangladesh could engage with independent evaluation agencies to improve its international competitive rankings and standing in the International Green Growth Index.

Critical implementation actors to be empowered

The key institutions involved in the above interventions would be the following. The government would benefit from holding national consultations to refine the roles and responsibilities.

- Ministry of Foreign Affairs (MoFA);
- Economic Relations Division (ERD) of Ministry of Finance (MoF); and
- Ministry of Environment, Forest and Climate Change (MoEFCC). (Table 3.12).



Table 3.12 Indicative Targets for Proposed Major Green Indicators Relating to International Engagement on Climate Change

Parameters relating to international engagement on climate change	Observed 2019	Predicted 2025	2030
Green Growth Index Level ^a	–	Moderate	High
Memorandums of understanding with international actors and other technology/knowledge sharing agreements ^b	–	5	10

Source: World Bank

Note:

– Not available.

^a Global Green Growth Institute (GGGI);

^b Based on stakeholder discussions with the Planning Commission and Power Cell, a regulatory agency under the MoPEMR

This chapter discussed the policies and action to help orient Bangladesh's development strategies for green growth. Given financial and institutional constraints, the most impactful and urgent action to achieve climate-resilient development should be prioritized. For this purpose, this chapter introduced a potential framework, which will need additional fine tuning through more in-depth consultations and discussions involving key stakeholders in Bangladesh. The action mentioned above greatly influences development, and climate adaptation and mitigation while also considering the necessary trade-offs and distributional consequences. Considering Bangladesh's pronounced climate vulnerability, particularly among the impoverished, enhancing climate adaptation and resilience remains a foremost concern. Regarding mitigation, in the immediate future Bangladesh should prioritize policies and investment that yield substantial development co-benefits. Priorities include enhanced energy efficiency, improved transmission, reduced air pollution and urban congestion, sustainable management of natural resources, and facilitating the adoption of energy from renewable sources and energy imports to cater for future demands. By concentrating on these measures, Bangladesh should be able to fulfil its NDC obligations until 2030.

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Enabling Environment:

Regulatory Framework,
Institutional Arrangements,
and Policies

Chapter 4 provides recommendations to enable the implementation of green growth in Bangladesh. These recommendations center on strengthening Bangladesh's regulatory framework, institutional arrangements, and knowledge structures. First, the chapter notes that Bangladesh has multiple environmental laws, regulations, and plans, yet demonstrates low performance in environmental management largely due to implementation-capacity constraints and financing problems. The chapter proposes the enactment of a Framework Act to provide a legal basis for action addressing climate risks and adopting green growth principles. Second, governance and institutional arrangements are discussed, focusing on the role of the Ministry of Environment, Forest, and Climate Change and its eight specialized entities. Then the chapter then identifies major institutional challenges, including limited coordination with other ministries, departments, local government, and development partners; funding shortages; inadequate technical skills; and the absence of a quantitative monitoring and evaluation system. The chapter notes

that the recently updated environmental conservation rules address some of these challenges and provides additional recommendations to strengthen governance and institutional arrangements for green-growth implementation in Bangladesh. Lastly, the chapter discusses how fossil-fuel negative externalities should be factored into energy prices to address environmental damage and climate change. It argues that carbon pricing can aid adaptation and decarbonization by eliminating subsidies and signaling commitment to a greener economy. In view of limited financial resources, prioritizing urgent and impactful action is essential, aiming for resilience and low-carbon development. Additional recommendations are provided to better integrate environmental concerns in planning and budgeting, strengthen green-budget formulation, and better involve state-owned enterprises, non-governmental organizations, and the private sector.

4.1 Strengthening the Regulatory Framework for Green Growth in Bangladesh



Environmental laws, regulations, and plans

Bangladesh has enacted many environmental rules, regulations, and plans—environmental activism started immediately after independence and gathered force in the post-1990 period. This momentum has further accelerated since 2009 in the wake of global concerns about the growing threat of climate change. Accordingly, much of Bangladesh’s policy action and its programs in recent years focus on implementing the global climate-change agenda. Bangladesh’s impressive list of environmental laws, regulations, and plans covers a wide range of environmental issues. Despite this array of policies and programs, Bangladesh’s overall environmental-management performance requires strengthening implementation capacity constraints and financing issues exist.

The overarching policy framework that pertains to green growth is the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) of 2009, which is currently under revision. Bangladesh has not yet enacted a climate-change law. Under the recently released NDCs, the MoEFCC has been given the lead, with relevant sector ministries providing measurement, reporting, and verification.

The NDC also directs other line ministries to produce important and relevant information. While Bangladesh has made commitments to the UNFCCC regarding climate change, and its government has set policy priorities, a National Framework Act would provide a legal basis for climate-resilient and green practices and action bearing on adaptation and mitigation. This is in line with international examples—four other Asian countries, China, Malaysia, the Republic of Korea, and Thailand, and 17 European countries have adopted national climate laws.

Exploring the enactment of a framework act that incorporates climate risks and green growth

Adopting a systematic framework act would allow for a comprehensive systematic approach to implementing green growth that is climate resilient. Such an act could create a high-level national coordination committee for the development of green climate resilience as an important step in meeting the NDCs and ensuring local adaptation. The proposed act would support alignment and transparent implementation of government

policies and programs such as the BCCSAP and the Mujib Climate Prosperity Plan (MCPP) 2022–2041 and private-sector compliance with climate regulations. This aligns with the recommendations from the World Bank’s 2022 CCDR. A high-level national coordination committee would enable stakeholder representation, including civil-society organizations (CSOs) and academia, in formulating and monitoring the implementation of the national climate strategy and the Bangladesh Climate Fiscal Framework (BCFF) 2020. The BCFF provides an important starting point for fiscal planning; however, more systematic detailing of estimated costs of climate investment and green-growth revenue is needed. The BCFF should estimate core climate programs like the NDC/BCCSAP, MCCP, BDP 2100, and the Country Investment Plan for Environment, Forestry, and Climate Change (EFCC CIP). Furthermore, the BCFF should include prioritized investment, green growth-engine revenue, and enabling policies, along with the national budget and be included in the Annual Development Plans (ADPs).

4.2 Strengthening Institutional Arrangements for Green Growth in Bangladesh



Governance and institutional arrangements for environmental management: background and challenges

In 1989, the government created the MoEFCC as the main agency responsible for managing the environment. Its terms of reference were broadly defined through the National Environment Policy (NEP) 1992 and the National Forest Policy (NFP) 1994. There are eight specialized select agencies that support the implementation of MoEFCC's agenda, including the Bangladesh Forest Department (BFD), the Department of Environment (DoE), the Bangladesh Forest Industries Development Corporation (BFIDC), the Bangladesh Forest Research Institute (BFRI), and the Bangladesh National Herbarium (BNH). As its institutional setup shows, much of MoEFCC's early focus has been on managing forestry resources, with other environmental matters receiving much less attention (World Bank 2006).

The DoE has the main institutional responsibility for handling environment-related matters. The mandate for the DoE was formalized through the Environment Conservation Act 1995. The DoE undertakes six major tasks:

- monitoring environmental quality;
- controlling and monitoring industrial pollution;
- establishing regulations and guidelines for activities affecting the environment;
- reviewing environmental impact assessments (EIAs) and managing the environmental clearance process;
- promoting environmental awareness through public information programs; and
- coordinating the implementation of a number of international protocols and conventions to which Bangladesh is a signatory.

The above are tough challenges and require considerable resources, technical skills, and strategic vision. Unfortunately, experience shows that the capabilities of the DoE and the MoEFCC are very limited (Ahmed 2017; World Bank 2006).

The DoE faces many major constraints. First is the shortage of funding; second is the excessive focus on the system for project approvals on environmental grounds, which suffers from several issues and challenges, including non-transparent procedures and discretionary influences. Third is the inadequacy of technical skills; fourth, the large number of donor-driven projects that are uncoordinated and poorly implemented. Fifth is the absence of a quantitative monitoring

and evaluation framework. Technical data on environmental performance are scarce and not regularly monitored to check progress.

Another major institutional weakness is a lack of strong coordination between the MoEFCC and other ministries with major inputs in determining the state of the environment. These include the ministries of water, land, fisheries, and local government. Although MoEFCC is responsible for managing the environment, it has little or no control over the work of these other line ministries. There are no formalized institutional arrangements for coordinating policy making related to protecting the environment in the context of ensuring sustainable development. The MoEFCC, for example, has little influence in setting prices for fuel, water, or in determining the proper tax and subsidy policy for environmental management.

A final major institutional weakness is the absence of role of local government institutions (LGIs) in environmental management (World Bank 2018). This reflects the general pattern of highly centralized governance in Bangladesh, and the MoEFCC is no exception. The MoEFCC needs additional technical capacity to come up with policy suggestions to implement the polluter-pays principle as enunciated in the 6th Five Year Plan, which ended in 2015. In the absence of

a framework for operationalizing the polluter-pays principle, a good number of manufacturing industries with high environmental externalities continue to run their business to maximize profits while risking the environment and public health.

An encouraging update to the Environmental Conservation Rules (ECR) strengthens the institutional structure for air pollution management and gives the DoE greater powers to penalize polluters. Aiming to protect environmental health, the government has published a new rule based on Section 20 of the Bangladesh Environment Conservation Act, 1995. The main objectives of this rule are to prevent, control, and reduce air pollution. The rule also authorizes the government to appoint a Director General of DoE responsible for managing and maintaining enforcement. The rule specifies several types of pollution such as that caused by factories, vehicles, construction, and garbage. According to the new rule, there will be a committee that will impose penalties for such pollution.

Financing challenge

Shortage of financial resources is one of the key reasons for Bangladesh's weak performance in environmental protection. The functioning of at least four line ministries and one department has a major influence on the natural environment: The MoEFCC; MoWR; MoL; MoFL; and the LGD of the Ministry of Local Government, Rural Development and Co-operatives (MoLGRD). The LGD plays the all-important role of managing water supply and waste through city corporations and municipalities. **Table 4.1** below provides an insight into the environment-centric action of key ministries through their climate-relevant budget allocation.



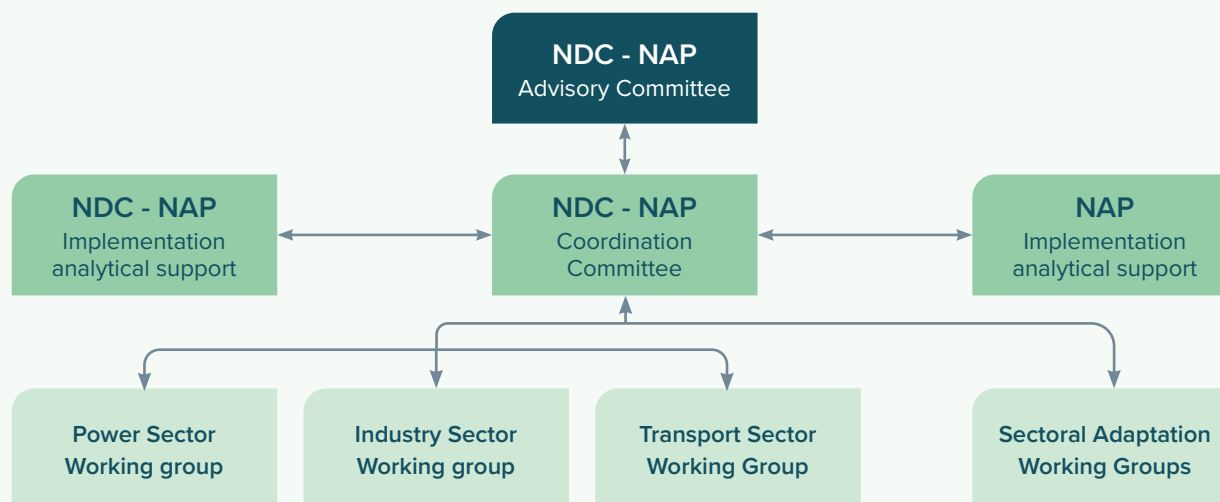
Table 4.1 Climate-Relevant Allocations for Ministries, FY 2022

Selected ministries / agencies	Total budget (Tk, millions)	Climate-relevant allocation (Tk, millions)	Climate-relevant portion of total budget (%)
Ministry of Textiles and Jute	6,915.5	345.5	5.0
Ministry of Environment, Forest and Climate Change	12,226.4	3,792.1	31.0
Ministry of Power, Energy and Mineral Resources	20,864.9	1,294.9	6.2
Ministry of Land	22,283.8	1,079.4	4.8
Ministry of Fisheries and Livestock	34,372.2	10,596.7	30.8
Ministry of Women and Children Affairs	41,891.5	5,463.9	13.0
Ministry of Shipping	51,373.3	4,444.6	8.7
Ministry of Housing and Public Works	63,453.1	4,457.0	7.0
Ministry of Water Resources	88,265.8	28,339.0	32.1
Ministry of Disaster Management and Relief	99,508.3	24,582.2	24.7
Ministry of Agriculture	162,014.4	58,000.6	35.8
Ministry of Science and Technology	212,040.5	26,761.7	12.6
Sustainable and Renewable Energy Development Authority	253,978.4	10,707.4	4.2
Road Transport and Highways Division	329,419.8	2,534.9	0.8
Local Government Division	392,194.6	27,522.5	7.0

In FY 2020, out of the 58.1 percent of the total national budget for 25-line ministries/divisions, 7.8 percent was climate relevant, reflecting 0.8 percent of GDP. Currently, 25 ministries/agencies are receiving budgetary allocations that are for implementing climate-relevant activities. Table 4.1 shows several key ministries that can contribute significantly to climate action and development but have been allocated very few resources to pursue these tasks. Only 0.77 percent of the total allocation to Road Transport and Highways Division (RTHD), for instance, is a climate-relevant allocation while the LGD has only 7 percent of its total budget dedicated to climate-relevant activities. According to publicly available information, none of the ministries or government agencies appear to have included climate change in their performance targets and other accountability processes. To make green growth a countrywide effort, the key performance indicators of government agencies and ministries should be aligned to climate and development goals. Ministries' and departments' annual reports should all be required to include a section on their progress toward climate goals and the related challenges ahead.



Figure 4.1 Proposed Nationally Determined Contribution-National Action Plan Implementation Framework



Source: MoEFCC (2018)

Suggested institutional reforms

Proper implementation of green-growth policies will require substantial improvements in institutional arrangements for sound environmental management. The main institutional reforms are highlighted **Figure 4.1**.

Strengthening environmental coordination: the disconnect between the greener economic development strategy and environmental management is partly due to the sectoral policy weaknesses noted above. The disconnect, however, also reflects the absence of a coordinating body for integrating growth with environmental concerns. The **Figure 4.1** illustrates the NDC-NAP implementation framework:

This framework was designed to serve as a single structure both for implementing the NDCs and for including and integrating the implementation of the NAP. Depending on the outcome of the review of the BCCSAP, such arrangements might be expanded to also cover the updated BCCSAP, since doing so will be more efficient than setting up parallel arrangements for its management and implementation. If this were done, then further sectoral working groups for both mitigation and adaptation should be established to manage policy development and track progress in those sectors.

To strengthen monitoring and verification mechanisms, developing an annual scorecard is critical to record progress and achievements related to government agencies' adaptation and mitigation activities. This scorecard should use an appropriate tracking methodology. Furthermore, to strengthen governance, a high-level Secretary at the Prime Minister's Office is needed to lead, coordinate, and review progress annually and report directly to the Prime Minister. These enhancements would address the issues of embedding environmental performance criteria in key ministries, ensuring coordination, and providing accountability.

Strengthening the MoEFCC: for the MoEFCC to play its role as the central body for environmental management, its capabilities must be significantly strengthened. As a first step, progressive increases in its budget must be provided to reach the target of 0.5 percent of GDP by FY 2041.

This is a modest target but essential to build up capacity through better staffing, including professional staff; establishing a strong digital management information system based on a databank that gets regularly updated; and implementing a regular monitoring and evaluation of environmental compliance. The MoEFCC needs to build strong partnerships with the private sector, NGOs, and the research community in the areas of compliance, monitoring, and knowledge management, including data gathering and policy research. A system of regular dialogue with stakeholders, including public hearings and participatory policy development, will be essential to improve policy implementation and compliance. The DoE, which is a technical arm of the MoEFCC, needs to be restructured in line with international experience to enable it to carry out environmental management more effectively.

The MoEFCC and relevant line ministries must be strengthened to deliver climate programs. Climate policies and national adaptation goals should be integrated into the planning and decision-making process in all core ministries, including energy, power, transport, water, local government, industry, agriculture, disaster management, land, and fisheries. Furthermore, ministries should merge climate adaptation principles into existing government rules and regulations, such as urban storm-water regulations, sewerage connection, and tariff levies. Adequate staffing, resources, and coordination across government agencies—particularly for managing urban water services and overall urban planning—are needed.

Strengthening delta-management institutions: efficient implementation of the BDP 2100 requires a high level of institutional coordination and financing, as well as enabling laws, policies, and regulations. Coordination mechanisms for investments need to be established, such as the setup of the Delta Wing, Delta units in sectoral ministries, and the Project/Programme Selection Committee (PPSC). Moreover, the enactment of a Delta Act would provide the legal basis to establish mechanisms to govern and fund the BDP 2100. Necessary action includes investment prioritization; stable budget allocations; adequate monitoring, evaluation, and accountability; and cross-sectoral coordination across the MoWR, MoLGRD, and related sector departments.

Decentralizing environmental management: to ensure proper environmental management, the government also needs to decentralize implementation to local institutions for proper management of the environment. The local governments, both in urban and rural areas, are best placed to carry out this function. More generally, the decentralization of political, administrative, and financial authorities is a cross-cutting and burning institutional issue facing Bangladesh. Once there is political buy-in for this critical cross-cutting reform, the appropriate assignment of environmental functions by different levels of government institutions can be decided. Bangladesh can learn what might be the appropriate division of responsibilities from international examples of good practice. Typically, community-level issues are best

managed at the local level while cross-cutting national-level ones are best handled at the national level. To ensure seamless implementation and avoid conflicting signals, a formal coordinating mechanism between national- and local-government agencies responsible for environmental management must be established so that there is continuous dialogue and exchange of information. The LGs themselves will need to be participatory in their approach and adopt proper mechanisms for allowing citizen's participation in all local issues including environmental management. Strong dialogue and ownership of the environmental agenda at the community level can be instrumental in ensuring proper compliance and reduce the burden on public agencies.

Alignment of key ministries with green growth:

several ministries and departments beyond the DoE can help create an enabling environment for greener industrial growth. Industrial development in Bangladesh will continue to come at a high cost to the environment unless the DoE becomes more involved in issues related to resource-efficient cleaner production (RECP), and unless other parts of government dedicate more attention to sustainability concerns. Environmental systems and capacity must be developed and strengthened, particularly among the institutions responsible for directly overseeing industry, industrial estates—special economic zones (SEZs) and export processing zones (EPZs)—and commerce. The following subsections discuss

how the DoE, the Ministry of Commerce (MoC), the MoI, the BEPZA, the Bangladesh Economic Zone Authority (BEZA), and the MoF are contributing and could further contribute to the greening of Bangladesh's industrial sectors. A concerted effort by several ministries and agencies, the private sector, and civil society is required to reverse trends of environmental degradation and shift the country towards a green-development path. While the DoE's continuous efforts to strengthen enforcement are essential, such efforts would become too costly and unsustainable without the cooperation of other ministries and agencies, as well as the private sector. Coordination among ministries and agencies would help harmonize the policies to promote better environmental performance. A better-coordinated mechanism to incentivize the private sector is needed to scale up cleaner production, and public-private dialogue (PPD) plays a critical role. The following are potential recommended institutional roles and actions under the proposed Bangladesh Green Growth Framework.

a. **The Ministry of Commerce** has a mandate to promote better environmental management of export-oriented industries and could do more in this regard. This could include updating the export policy to incorporate environmentally sustainable production considerations, which are not included in the current policy. Concerning imports, the MoC plays a role in restricting certain harmful substances and mandating minimum environmental, health, and

safety standards. The MoC is well-positioned to sponsor laws targeting specific chemicals that can harm the environment or the public. One example where the Commerce Minister stepped up in this regard was to propose the Formalin Control Act, passed in 2015. The Act regulates the import, production, transportation, storage, sale, and use of this preservative.

b. **The Ministry of Industries** has the potential to take on a greater leadership role in environmental management and RECP through its core function of issuing and overseeing industrial policy. A good example of the MoI's role in issuing specific rules that directly address environmental aspects of a specific industry is the Ship Breaking and Recycling Rules (2011), which aim explicitly for "safe and environmentally sound ship recycling in Bangladesh." The MoI also participates in various national committees that broadly relate to environmental management, including those for climate change, climate finance, and national rivers commissions. The MoI has a number of ways of promoting and overseeing the environmental management of industries through the companies it controls. These companies include the Bangladesh Chemical Industries Corporation (BCIC), the Bangladesh Sugar and Food Industries Corporation (BSFIC), the Bangladesh Steel and Engineering Corporation and the Bangladesh Small Cottage Industries Corporation (BSCIC).

- c. **The Bangladesh Export Processing Zones Authority** has made some efforts to improve its systems and capacity in environmental management. This is despite the Bangladesh Export Processing Zones Authority Act of 1980's lack of specific environment-related clauses. In BEPZA's investment proposal form for investors, proponents notably need to provide information related to the composition of effluents and their proposal for in-house treatment, arrangements for disposing of any dangerous or injurious chemicals, and arrangements for environmental controls. At the zone level, BEPZA could do more to ensure each of its zones is properly sited, designed, and managed from environmental, health, and safety perspectives. When new zones are planned, comprehensive EIAs should be undertaken to ensure that nearby environmentally and socially sensitive receptors, environmental vulnerabilities, cumulative impacts of the zone, and other developments in that area on the natural resource base—land, air, and water, and biodiversity—are taken into account. In addition to environmental compliance, BEPZA could aim to promote RECP in the zones it manages. This could include both support at firm- and zone-level programs to foster cleaner production and industrial symbiosis. In doing so, BEPZA could draw on the international experience with eco-industrial parks.
- d. **The Bangladesh Economic Zone Authority:** unlike BEPZA, environmental management is built into the legal framework of BEZA. It should adopt guidelines and procedures to ensure that new economic zones are planned to incorporate comprehensive EIAs. These would need to take into account the proximity of nearby zones, the proximity of environmentally or socially sensitive receptors, and potential environmental vulnerabilities, as well as other existing and potential developments in the area. As BEPZA, BEZA could also aim to foster cleaner production in the zones to be established. Synergies between industries could, for instance, be taken into account when selecting tenants.
- e. **The Ministry of Finance** can play a key role in fostering green growth through fiscal policy, as well as facilitating access to finance for green investment. On both fronts, MoF agencies, including the National Board of Revenue (NBR) and the BB, have some initiatives in place. These should be developed and scaled up to support the rapid pace of industrial development. Building on results achieved to date from several refinancing/on-lending schemes, there is scope for the BB to accelerate the growth of green lending. Several of the above-mentioned schemes have faced slow disbursements for various reasons, such as implementation difficulties, lack of capacity among partner financial institutions, and lack of awareness/interest among potential borrowers. There is an opportunity to take stock of progress to date on green finance and identify remaining obstacles on both the supply and demand sides.
- f. **The private sector** is critical for scaling up cleaner production. The government should actively engage with the private sector to ensure that opportunities and obstacles for RECP in different sectors are well understood, obtain feedback on public pollution-control interventions, and promote cleaner production. Public-private dialogue is key to identifying, designing, and monitoring needed reforms. The Green Growth Working Group, established by the Business Initiative Leading Development (BUILD) and co-chaired by the private sector and the MoEFCC, was a valuable initiative that ought to be developed with a strong mandate to foster RECP. Companies can play a major role through corporate social responsibility (CSR) and supply-chain initiatives.

4.3

Strengthening Budgeting and Planning for Green Growth in Bangladesh



Strengthening environmental concerns in planning and budgeting:

integrating environmental concerns in budgetary management is essential to green growth. Bangladesh has made progress recently. In 2014, the Finance Division of the MoF and the General Economic Division of the Planning Commission came together under the United Nations Development Programme's (UNDP) Poverty-Environment and Climate Mainstreaming Project to produce the first Climate Fiscal Framework under UNDP's supported Poverty, Environment and Climate Mainstreaming Project (UNDP 2015). Initially, much of the focus is on ensuring greater resources for climate-change management and environmental improvement. As noted earlier, taxation and incentive policies for environmental management are almost non-existent. Progress on green public financial management (PFM) in terms of green accounting, procurement, and auditing also remains to be made. The planning process does incorporate environmental concerns in public-investment decisions. Owing to capacity constraints, however, full accounting of environmental degradation in investment projects does not happen except in the case of major donor-financed projects. The full incorporation of the green PFM agenda is a long-term endeavor and will require long-term commitment, resources, and efforts. Institutional capacities in the MoF,

MoP, and concerned line ministries will have to be substantially strengthened.

Strengthening green budget formulation: in the short term, Budget Management Committees (BMCs), Budget Working Groups (BWGs), and Budget Management Branches (BMBs) need to be sensitized to the issue of greening the Ministry Budget Framework (MBF). In the medium term, the following action is recommended.

- The links of resource allocation to the government's environmental goals must be strengthened. The poor link between resource allocation to ministries/divisions and government priorities reflected in national documents is identified as a weakness in PFM Reform Strategy 2016–2021. The government is already adopting measures to address that weakness. The promising news is that the Medium-Term Strategy and Business Plan (MTSBP) guideline that has been prepared to strengthen links of budgetary allocations to national priorities already mentions the issue of addressing environmental cost-benefit analysis. The importance of undertaking significant capacity-development initiatives to ensure the actual performance of such an environmental cost-benefit analysis in the MTSBP preparation cannot be overstated.

- Each ministry/division should begin stating the relevance of their strategic objectives to environmental conservation and the sustainable management of natural capital in Section 2 of their MBFs and specifying the activities they are adopting in this regard. This will be a critical step towards truly greening Bangladesh's national budgets since it will formalize the embedding of environmental concerns in development and non-development budgets.

State-owned enterprises in Bangladesh have a pivotal role to play in fostering climate-change mitigation and adaptation efforts. Entities such as the Bangladesh Power Development Board (BPDB), BWDB, and the Bangladesh Agricultural Development Corporation (BADC) can significantly contribute to the country's green growth by (a) incorporating an explicit climate-relevant vision and mission statement, (b) setting ambitious goals and targets, (c) integrating them into the ADPs and expenditure accounts, and (d) aligning these objectives with national targets. Additionally, transparent reporting of target achievements on their websites would enhance climate inclusiveness and public disclosure, further advancing the climate-change framework.

To begin, it is essential for SOEs to incorporate climate-relevant visions and mission statements in their strategic planning. By explicitly acknowledging the importance of climate-change mitigation and adaptation, these enterprises set a clear direction for aligning their operations with green-growth objectives. This commitment to climate action will enhance their corporate responsibility and demonstrate their dedication to contributing positively to the nation's environmental goals.

Bangladesh's SOEs can play a crucial role in facilitating the green transition of SMEs through sustainable public procurement practices. As influential players in various sectors, SOEs can lead by example by prioritizing environmentally-friendly procurement of goods and services. By actively seeking out and procuring sustainable products from SMEs that align with green standards and eco-friendly practices, SOEs can create a strong demand for green products in the market. This, in turn, will encourage SMEs to adopt more sustainable practices and produce eco-friendly goods, enabling them to become an integral part of the country's green-growth journey. Additionally, SOEs can provide technical

support and capacity-building programs to SMEs, assisting them in enhancing their green credentials and fostering a culture of sustainability. By collaborating and empowering SMEs to embrace greener practices, SOEs can collectively contribute to building a more resilient and sustainable economy in Bangladesh.

Active involvement of the private sector and NGOs:

The private sector, such as the RMG one, and NGOs have been leading socioeconomic development causes in Bangladesh. The government must actively seek their involvement in green-growth policy advocacy and implementation. Locally led climate action programs can deliver models of devolved climate finance at scale, leading to cheaper and more effective outcomes, by reducing moral hazard, building on local knowledge, and strengthening accountability. Devolved climate finance and partnerships with local governments and NGOs/CSOs can further accelerate locally led climate action. Bangladesh has a multitude of effective localized investments that have strengthened community and household resilience to climate change, and which support community adaptation efforts. Local governments could play a greater role in partnership with NGOs and community groups to develop locally led solutions for climate action, by integrating participatory climate-risk planning and financing into local-development

planning and delivering on local solutions in local partnerships for climate action. Devolved climate finance can help increase direct-funding opportunities for CSOs. Strengthened partnerships with local governments can ensure the catalytic role of such funds by ensuring that local planning and financing focus on complementary investments to strengthen resilience.

Box 4.1**Need for Regular and Reliable Production of Environmental Data and Statistics**

For the Government of Bangladesh to prioritize policies and to achieve a GRID pathway, better environmental data and statistics are required.

These include environmental pollution monitoring data, such as ambient air and water quality, solid and water-related waste, hazardous waste and emissions from industries; disaggregated biophysical data on ecosystems, data on ecosystem services; and socioeconomic data on the impact of the environment on the local economies and livelihoods, among others. Better environmental data and statistics would contribute to the target monitoring of the government's 8th FYP, allowing for the incorporation of criteria to prioritize and monitor green-growth interventions and embed GRID principles in budget planning. Furthermore, such data would enhance polluters' accountability and the improved compliance with and enforcement of environmental management.

The government has already taken steps to improve the availability, quality, and reliability of its environmental statistics. In 2016, the Bangladesh Bureau of Statistics (BBS) embarked upon an ambitious process to improve environmental statistics and developed the Bangladesh Environmental Statistics Framework (BESF) 2016–2030, which aligns with the Statistical Act 2013, the National Strategy for the Development of Statistics, and other relevant policies. The BESF was developed as a strategic

action plan for government to move towards an integrated approach to collecting, analyzing, and disseminating environmental data and information based on national priorities and future plans, including achieving Bangladesh's green-growth potential.

Despite these efforts, the government faces several limitations and challenges in its successful implementation of the BESF, resulting in weak disclosure and accessibility of timely environmental data. Specific challenges include: (i) a lack of inter-ministerial and inter-agency coordination; (ii) a lack of a common format and platform for collecting, organizing and sharing environmental data; (iii) an absence of proper mechanisms to ensure the quality of data provided by respective responsible government agencies; (iv) insufficient financial resources and inefficient methods for data collection, compilation, processing, and dissemination of environmental data; (v) an absence of designated focal-point officers in respective data-providing government agencies; (vi) a shortage of skilled human resource capacity; and (vii) overly ambitious goals for data production that lack prioritization.

There is a strong need to improve the capacity of BBS and relevant data-producing government departments to ensure the

sustainable production of timely and quality environmental statistics. To operationalize the BESF, the government needs to (i) improve and/or newly develop mechanisms for inter-agency coordination for the generation, management and sharing of environmental data and statistics; (ii) boost the human-resource capacity of the BBS and relevant government ministries and departments, including introducing quality-control measures and regular training; (iii) introduce an innovative technology and data infrastructure for the efficient production, management and public sharing of environmental data and statistics, such as apps to display real-time automated pollution data, and drone technology for monitoring mangrove health; (iv) invest in strengthening the coverage and quality of environmental and natural-capital data and statistics with the specific goal of prioritizing, tracking the progress of, and streamlining green-growth policies; and (v) take a phased approach to data production, starting with the most polluted hotspots, government priorities on environmental conservation, and sustainable natural resource management. The government could also consider the monitoring and reporting of area-based, airshed, water basin, ecosystem, etc., environmental quality data as a legally binding requirement.

Source: World Bank (2023)

4.4

Indicative Policy Framework for Green Growth in Bangladesh

Implementation of the Bangladesh Delta Plan: the successful implementation of the BDP 2100 necessitates robust institutional coordination, sufficient financing, and supportive legal frameworks. Establishing such mechanisms as the Delta Wing, delta units in sectoral ministries, and the PPSC for investment coordination is crucial. Enacting a Delta Act would provide a legal basis to govern and fund the BDP 2100, requiring investment prioritization, stable budget allocations, monitoring, evaluation, and cross-sectoral coordination among relevant ministries.

To bridge the substantial financing gap, higher budget allocations, efficient execution, and diverse funding sources are essential. The estimated cost of the BDP 2100 investment plan to 2030 is US\$ 38 billion, while the current allocation is 1.13 percent of GDP in the ADP for FY 2022. Additional funding of US\$ 6.6 billion is needed to meet targets, requiring increased budget allocations, improved execution, and private financing. Water-user fees based on the beneficiary-pays principle could aid cost recovery in specific water-sector services.

Given the dynamic climate and socioeconomic conditions, regular reassessment of investment needs is crucial to avoid delays that may escalate costs and vulnerabilities. While many priority projects are included in the 8th FYP, only two have

been budgeted. Climate change outcomes and economic conditions also influence investment urgency, emphasizing the need for flexibility in planning and budgeting processes.

Managing air and water pollution: the adoption of the Delta Plan will also have positive effects on water quality by improving the population's access to clean water and sanitation, and better management of solid wastes. More-comprehensive management of this agenda, however, will require immediate attention to the adoption of proper pricing policies for water and fossil fuel. More generally, this calls for an integration of fiscal policies with environmental management. In particular, Bangladesh needs to adopt two major principles in the conduct of fiscal policy for better environmental management: (a) the beneficiary-pays principle; and (b) the polluter-pays principle. The former is particularly relevant for generating resources to ensure a sustainable supply of these services.

There is a huge backlog of unmet demand for piped water and safe sewerage services in both urban and rural areas, which the adoption of the Delta Plan will address. The latter is most relevant for internalizing the environmental degradation of two major and scarce public goods: clean air and clean water.

The adoption of the polluter-pays principle is absolutely essential to improving air and water quality. Clean air and water are increasingly becoming scarce environmental services in Bangladesh, partly because of limited supply but also because of continued degradation by users. Some of the major sources of air pollution are fossil-fuel-using vehicles, power plants and industrial units. Fossil fuel is subsidized in Bangladesh—a major example of inconsistency in the government's growth strategy and environmental protection that needs urgent policy attention.

Removal of fuel subsidies: the ideal cost for each fuel per consumption unit includes supply expenses, damage from global climate impact and local air pollution, and a standard value-added/general consumption tax. Present consumer prices fall significantly short of these ideals, occasionally failing to cover supply costs due to direct subsidies. As an initial measure, it would be advisable to terminate both direct and indirect fuel subsidies (Mercer-Blackman et al. forthcoming). Reform of the fossil fuel subsidy could support climate-change policy and goals (IRENA 2015). It could be recognized as part of a package of measures to implement NDCs, because reform could reduce emissions and free up resources to invest in sustainable energy systems. The International Energy Agency (IEA) (2015) points

to fossil-fuel-subsidy reform as one of five key measures to help bridge the gap between current commitments and the emissions reductions needed from the energy sector to stay within the 2° C warming target. The IEA encourages the reform of consumer subsidies by 2030 (IEA 2015).

Additionally, if a part of fiscal savings is used to improve energy efficiency and invest in renewable energy, the reduction in CO₂ emissions could average about 18 percent per year in the case of Bangladesh—the CO₂ reduction estimates are 8.7 percent from the removal of subsidies and 13.6 percent when gains from investment in energy efficiency and renewable energy are taken into account (IRENA 2015). Most policies to reduce greenhouse gas emissions, such as renewable and energy efficiency policies, cost government resources to implement – very few climate policies save government funds at the same time as effectively removing CO₂ from the atmosphere. Fossil-fuel subsidies can be thought of as a negative form of carbon pricing, and their removal is a necessary step towards policies that seek to correct carbon pricing, such as carbon taxes or emissions-trading systems. Indeed, the IEA calculates that currently, 13 percent of all energy-related CO₂ emissions are linked to an average subsidy of US\$ 115 per tonne of CO₂ emitted. On the other hand, currently only 11 percent of global CO₂ emissions related to energy are subject to carbon pricing, with an average cost of just US\$ 7 per tonne of CO₂.

Adoption of a carbon tax: removing the fossil-fuel subsidy is a first step. A second is to introduce a carbon tax focused on energy consumption—India, among other countries, introduced a green tax on fossil fuel in 2015. A green tax on fossil fuel is a tremendously useful policy for integrating environmental considerations into the growth strategy because it not only discourages the consumption of CO₂-emitting fossil fuel but also provides a very attractive source of revenue generation (Basu et al. 2022) that can be used for investing in clean energy and other environmental programs.

The World Bank's CCDD on Bangladesh (2022) points out that, given Bangladesh's pre-existing fuel-tax system, introducing an extra carbon tax on energy would entail minimal administrative effort and carry limited potential for noncompliance. Moreover, a green tax on fossil fuel is also a very good example of the application of the polluter-pays principle.

Tax on pollution from industrial units: this is another way in which the polluter-pays principle can be applied. Huge amounts of air and climate pollutants are emitted by industrial units, especially from brick manufacturing kilns. The usual practice to control industrial air pollution in Organisation for Economic Co-operation and Development (OECD) countries is to use a combination of laws, regulations, technology, and taxation. Industrial air-pollution control policies are just emerging in Bangladesh. The first policy initiative

concerns the control of air pollution from brick-manufacturing kilns. The Brick Manufacturers and Kiln Establishment Control Act 2013 was enacted in July 2014 to prohibit the use of older heavily-polluting kiln technology and replace it with new, cleaner ones. This is an important policy initiative.

Policies are also needed to control emissions from other sources such as the cement, steel and re-rolling, plastic, polyethylene, battery, and foundry industries. The adoption of clean technology requires consultation and cooperation with industrial enterprises. Bangladesh has set air-quality standards but monitoring by industrial units is difficult because of the absence of proper testing equipment and a database. This problem will need to be addressed urgently with technical assistance from international donor agencies. Japan in particular has an excellent track record of reducing air pollution at the same time that its industrialization base deepened. Once data and monitoring equipment are in place, a system of air-pollution taxes could be levied to create incentives for industrialists to adopt clean technology. Bangladesh is far behind on this front, however, since it aspires to reach high-income-country (HIC) status by FY 2041, it cannot afford to lag far behind on the monitoring and control of industrial air pollution.

Prevention of surface-water pollution: a major source of surface-water pollution is the uncontrolled disposal of industrial and household liquid and solid wastes in rivers, lakes, and

ponds. Many of industrial plants, including textile dyeing, washing and power plants, are located near rivers or lakes to take advantage of access to water. This advantage has unfortunately also resulted into heavy pollution of these sources of surface water owing to the uncontrolled dumping of industrial wastes. As an example, the leather tanning industry created huge water-pollution problem for the Buriganga River at the Hazaribagh Tannery Area. After years of lobbying by NGOs and action by the court system, the government finally agreed to relocate the tannery industry to Savar with a dedicated central effluent treatment plant. To address this, the process of assessing the environmental performance for new businesses, established under the Environmental Conservation Act 1995 and Environmental Conservation Rule 1997, requires new enterprises that are considered as heavy polluters to establish effluent treatment plants. The application of the effluent-treatment plant (ETP) policy, however, is uneven.

Furthermore, urban underground sewerage and open drains often empty untreated waste into lakes and ponds, which are also a repository for much urban household waste. As an important first step to addressing this, the government has banned the use of polythene shopping bags that end up in water bodies.

Arguably, water pollution from the inappropriate waste disposal is amongst the most pressing environmental challenge in Bangladesh. In addition to laws and regulations that set

preventive measures, the polluter-pays principle must be applied to create a strong disincentive against illegal disposal of industrial, commercial, and household wastes in surface-water bodies. In a forthcoming Bangladesh Country Environmental Analysis, data shows that 17 percent of the population relies on drinking water with arsenic concentrations above the WHO guideline of 10 parts per billion (ppb) (World Bank 2023). At the same time, urgent action is needed to launch a surface-water clean-up drive, including arrangements to treat drainage/sewerage water before it reaches public water bodies.

Sustainable management of forestry resources:

speeding up the process of afforestation across forested zones—and increasing its overall target—should be a high priority. Emissions from forestlands due to degradation stand at 1.18 MtCO₂e per year, while sequestration is 0.81 MtCO₂e per year, resulting in total positive emissions of 0.37 MtCO₂e per annum.

The government has committed to increase tree cover from 22.37 percent in 2014 to 24 percent by 2025, a relatively low target, while the NDCs (MoEFCC 2021) aim to reforest 450,000 hectares of degraded forestland. If implemented, this will flip the forestry sector from an emitter to a sink, with 5 Mt of additional carbon sequestered. Of the 90,000 hectares of newly accreted tidal mudflats in the estuaries and in coastal Bangladesh, 35,000–40,000 hectares could be planted with mangroves, potentially sequestering 30 MtCO₂e in the next 25 years and providing

other ecosystem services (Rahman et al. 2019). The Forest Department plans to develop a total of 44,000 hectares of coastal plantations with financing for 24,000 hectares from the World Bank's Sustainable Forests and Livelihoods Project and 20,000 hectares from the Green Climate Fund. The Forest Department also plans to develop an additional 126,748 hectares of land for coastal greenbelts. These afforested lands will potentially sequester 230 MtCO₂e by 2025.

On the policy front, however, the biggest challenge is to control the illegal poaching of forest resources. A related issue is the lack of adequate data on these forest resources that prevents effective monitoring and evaluation. It not only complicates assessing the adequacy of forest resources but also makes it difficult to control illegal poaching and hold forest officers accountable. Once an adequate database is established that allows effective monitoring of forest resources, the planning of forest investment, based on demand and supply forecasts and the consistency of these with needs for sustainable use, can be done. In addition to public and private investment in new forest areas and reforestation of existing areas to increase forest density, the government might review the role of forest taxation to ensure its sustainable use. A combination of new investment and taxation on logging, as appropriate, could be instrumental in securing the forestry targets.

Coastal forest restoration for climate resilience:

restoring mangroves in coastal areas is crucial for ensuring Bangladesh's coastal stability and resilience. Mangroves act as natural barriers, protecting millions of people from coastal flooding during cyclones and averting billions of dollars in annual damage. Villages shielded by mangroves, for instance, experienced significantly lower monetary losses during cyclone Sidr compared to unprotected areas. Even a 100-meter-deep coastal shelterbelt can reduce storm-surge velocity by up to 92 percent, safeguarding embankments. Combining mangroves with casuarina trees in a double shelterbelt 200–300 meters in depth can decrease storm-surge height by up to 22 percent and velocity by up to 49 percent. Furthermore, mangroves play a significant role in carbon sequestration, absorbing CO₂ four times faster than mature land-based forests. This would help offset a notable portion of Bangladesh's fossil-fuel carbon emissions, contributing to climate-change mitigation efforts in the country.

Climate-smart urban development: rapid urbanization in Bangladesh has driven economic growth, but it has also led to environmental degradation and heightened climate vulnerability. Major cities and towns face imminent challenges from climate change, including extreme heat, urban flooding, and rising sea levels in coastal areas with millions of inhabitants. To address these issues, urban planning must integrate adaptation strategies, focusing on improved governance, resilient and affordable housing, urban-rural

connectivity, and nature-based solutions. Dhaka and Chattogram, as urban hubs, require support to enhance infrastructure resilience and manage internal climate migration. Investing in adaptation measures can protect urban residents from climate impacts, improve services, and reduce environmental degradation and congestion. Early warning systems and social safety nets can foster resilience, while risk-management and climate-proofing measures in critical infrastructure can safeguard communities from the adverse effects of climate change.

Climate-smart agriculture: Bangladesh's agriculture sector has a crucial role in promoting inclusive growth and poverty reduction, even though agriculture's share of the country's GDP is in decline. Agricultural growth has been instrumental in reducing rural poverty, contributing 69 percent of rural poverty reduction between 2000 and 2010, and 27 percent in the following decade. Despite its importance, the sector faces threats from climate change, such as saline intrusion to soil and water, water stress, and temperature changes, as well as the unsustainable use of inputs including fertilizers. To ensure sustainable growth, agriculture must be adaptive and resilient to climate change, with a focus on diversification and climate-smart agricultural (CSA) practices.

By diversifying agricultural production, the sector could enhance resilience to climate change and continue to contribute to poverty reduction.

The policy emphasis on self-sufficiency in rice production has had ecological costs, making it essential to render rice cultivation more productive and less emissive. Adoption of CSA practices, such as salt-tolerant rice varieties, adaptive cropping patterns, and improved irrigation efficiency, can reduce input use and emissions. Challenges such as farm fragmentation, limited access to finance and inputs, and inadequate infrastructure must, however, be addressed to scale up these practices.

Investing in CSA offers multiple benefits, including higher productivity, increased resilience, and lower greenhouse gas emissions. Bangladesh's Climate-Smart Agriculture Investment Plan (CSAIP) outlines five investment packages to support climate-resilient, low-carbon growth. By promoting diversification and innovation systems, private sector participation can increase CSA adoption, supporting research on high-quality seeds, and enhancing financial services. Regulatory and policy changes, such as reforming fertilizer policies and formalizing land-rental markets, could incentivize green, resilient, and diversified production systems. It is also crucial to support women farmers' adoption of CSA technologies and practices, enabling their access to capacity building, finance, and the transition to paid agricultural work, contributing to women's economic empowerment and overall rural household support.

Enabling women to adopt new agricultural practices will have wide-ranging benefits since the majority of agriculture workers in Bangladesh are female. Ensuring their access to climate-adaptive technologies, capacity building, and financial support will empower women and strengthen rural households. By implementing a combination of these interventions, Bangladesh could promote sustainable agriculture, resilience, and climate adaptation while reducing poverty and achieving food and nutrition security.

Strengthening social protection: climate shocks have a disproportionate impact on the poor, especially women, leading to irreversible losses in human and productive capital. To address this, social protection systems must respond quickly to provide support. Integrating gender aspects into social welfare programs can reduce vulnerabilities and ensure access to support services while transitioning from in-kind to cash-based programs gives shock-affected households more flexibility in mitigating impacts. Leveraging a digital payment infrastructure could expedite cash transfers, and streamlining disaster relief data could rapidly identify recipients for income support. Identifying disaster-risk financing sources, instead of repurposing budgets, enables faster assistance deployment. Increasing coordination with the MoSW could improve efficiency across multiple social-welfare programs, enhancing the overall response to climate shocks.

Strengthening macro-financial resilience to disasters: the government spends approximately US\$ 319 million annually on post-disaster interventions, representing 1 percent of total government expenditure. The actual total, however, is likely higher since it is embedded in ongoing operations and maintenance budgets. Annual post-disaster response costs are estimated at US\$ 810 million, but in the event of a severe flood, the funding need could exceed US\$ 1.7 billion. Strengthening disaster resilience and financing is essential, as there is no comprehensive strategy or regulatory framework for meeting natural disaster costs. Catastrophe insurance is limited, and microinsurance regulations need improvement to enhance access and affordability. Development aid could play a critical role, and a risk-layering approach in disaster-risk financing could significantly reduce financial costs following severe disaster events. Using additional financial instruments such as contingent credit or sovereign insurance can enhance the cost-effectiveness of the government's strategy for disaster-risk financing.

Encouraging private investment in climate change: The BCFF could enable private investment to address climate change through the government's judicious use of regulations, taxes, subsidies, financial-sector policies, and pricing policies. The BCFF provides a starting point for such policies, such as eliminating fossil-fuel subsidies, introducing a carbon tax, implementing the polluter-pays principle, and

applying proper pricing policies for all SOEs—public utilities' financial-sector policies especially should mobilize climate financing from the banking sector, domestic and international capital markets, and carbon markets. Establishing well-structured PPPs can help bring in private capital and increase efficiency in sectors critical for the climate agenda, including urban infrastructure, transport, energy, waste, and water. The Bangladesh Water Multi-Stakeholder Partnership has initiated various PPP projects, which include the Gazipur City Corporation Municipal Wastewater Management Project, Narayanganj City Corporation Municipal Wastewater Management Project, and common effluent treatment plants at the Bangabandhu Sheikh Mujib Shilpa Nagar Economic Zone and the Jamalpur and Srihatta Economic Zones.

Addressing market and institutional barriers can increase financial-sector capacity to support sustainable projects: priority action includes (a) setting appropriate macroprudential incentives reflecting environmental risks in capital and provisioning requirements; (b) mandatory certification of environmentally friendly assets in line with best international practices; (c) knowledge and capacity strengthening of banks to originate and monitor green loans; and (d) increasing the availability of long-term finance for the climate agenda through green-finance instruments. Such instruments include domestic and international sovereign green bonds and private placements of green bonds by banks and corporations supported by national regulations aligned with international

standards. These measures would diversify sources of liquidity and support capital market development and lending to longer-term projects. Equally important are policies that will improve the commercial viability of climate-smart projects to increase demand for sustainable finance. The business case for climate-smart investment and demand for green finance is suppressed when prices do not reflect externalities. Enhancing and enforcing risk-assessment policies relating to the environment and climate change would help address this gap.

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**Green-Finance
Diagnostic
for Green Growth
in Bangladesh**



A decorative graphic on the left side of the page consists of numerous thin, parallel, curved lines in a light yellow-green color. These lines originate from the top-left corner and curve downwards and to the right, creating a sense of movement and depth. They eventually merge into a thicker, more solid-looking band at the bottom of the page.

Chapter 5 provides an overview of the green financing landscape in Bangladesh. Using the green-finance value chain as an analytic framework, the chapter identifies key green-finance stakeholders in the country, provides information about the demand for green financing, and highlights the main barriers to channeling green finance into Bangladesh's green-growth initiatives.

5.1

Green-Finance Landscape in Bangladesh



Green finance

Green growth requires leveraging substantial funding to promote economic growth that preserves the environment. National governments face fiscal constraints due to higher COVID-19-related expenditure, weak domestic revenue growth, macroeconomic imbalances, and global economic uncertainties. Consequently, there is limited space to finance green-growth policies and enhance the transition to a green, sustainable economy through government means alone. The World Bank has estimated that, just to meet the SDGs, domestic governments would need to provide between 50 and 80 percent of the funding and that the remaining amount should come from third parties (Weber 2018).

Preserving the ability of governments to invest in the transition to green economies will be critical to counteract the inequitable impacts of climate change and the COVID-19 pandemic.

Government's plans to build back better should place the need for green-growth investment front and center. Green financing offers a viable solution to complement fiscally constrained governments in their effort to foster sustainable, resilient, and inclusive growth. As mentioned in the 2022 Bangladesh Country Economic Memorandum, unlocking, leveraging, and channeling investors', private sector, and donors' financing into environmentally friendly projects and initiatives will become increasingly important in supporting the transition to a greener economy (World Bank 2022a).

Green financing aims to ensure sufficient and adequate financial flows to support the implementation of a green-growth strategy.

The term green finance is traditionally used in reference financial tools such as green bonds, green loans, or carbon-market instruments, among others (Sachs et al. 2019). **Table 5.3** lists some financial instruments being used in Bangladesh. Financing green growth, however, goes beyond the establishment and use of financial instruments and should consider the demand side for green development with the supply of resources to do so. Both the demand and supply sides of green finance are necessary for the advancement of efforts to internalize negative environmental externalities and foster new environmentally friendly investment. Thus, when discussing green finance, this report refers to both the supply of and demand for financing for the promotion of green growth. This definition aligns with that of BB for sustainable finance: "any form of financial service that includes investment, insurance, banking, accounting, trading, economic and financial advice integrating environmental, social, and governance (ESG) criteria into the business or investment decisions for lasting benefits of both clients and society at large" (BB 2020) (**Box 5.1**).

Box 5.1**Selected Definitions of Green Financing/Sustainable Finance****G20 Green Finance Study Group**

Financing of investments that provide environmental benefits in the broader context of environmentally sustainable development. These environmental benefits include, for example, reductions in air, water, and land pollution; reductions in greenhouse gas emissions; improved energy efficiency while utilizing existing natural resources; as well as mitigation of and adaptation to climate change and their co-benefits. Green finance involves efforts to internalize environmental externalities and adjust risk perceptions to boost environmentally friendly investments and reduce environmentally harmful ones. Green finance covers a wide range of financial institutions and asset classes, and includes both public and private finance. Green finance involves the effective management of environmental risks across the financial system.

Source: G20 (2016)

World Bank Group

Green finance includes all lending and investment that contribute to climate mitigation, climate adaptation and resilience, and other environmental objectives, including biodiversity management.

Source: World Bank (2021a)

Bangladesh needs to address bottlenecks that impede the flow of financial resources to green-growth projects. Financing green growth requires an enabling environment for private financial institutions. It also requires addressing financial-market failures that keep costs high and reduce incentives to provide finance to productive sectors and firms. The 2022 Bangladesh Country Economic Memorandum suggested addressing the interest-rate cap, strengthening the licensing framework and weak corporate and regulatory governance structures, and solving operational inefficiencies to allow finance to flow to underserved segments, such as MSMEs and sectors perceived as risky, and to long-term green projects (World Bank 2022a).

Underdeveloped capital markets in Bangladesh contribute to significant restrictions in access to long-term finance. The country's two stock exchanges, in Dhaka and Chittagong, are relatively small. They are equity driven, with a combined market capitalization of less than 20 percent of the country's GDP, lower than in peer countries. Banks and other financial institutions account for roughly a quarter of the market capitalization. The corporate bond market is nascent, with bond issuances at 5 percent of GDP in 2019, compared to 23 percent in Indonesia, and access to foreign borrowing is limited by a high level of foreign exchange restrictions. Market-based financial

development is, among other things, held back by a national savings scheme, which affects the allocation of retail savings and investment away from capital markets. As mentioned in the 2019 Bangladesh Financial Sector Assessment Program, the lack of depth in the institutional investor segment, which consists of banks and insurance companies but does not include any pension funds, has contributed to stagnation in market development and dynamism (World Bank 2019).

The banking sector's capacity to provide financing and managing price risks is constrained. Behind this are weak corporate and regulatory governance, related party lending, and weak credit underwriting capacity, contributing to weak asset quality. The country needs to preserve financial stability and foster credit growth by improving asset quality and increasing the capitalization of banks, especially state-owned ones. Bangladesh also has to address weak corporate governance to maintain financial stability and avoid costly bank failures. Banks are also over-burdened with stressed loans and various regulatory distortions that hamper extending loans to real sectors. In the long-term finance markets, there is a lack of good quality issuers and institutional investors. Without solving these structural issues and constraints, promotion of green finance or any labelled product is difficult.

The impact of climate change and climate-related natural disasters can lead to losses for the financial sector estimated at 3–5 percent of

outstanding loans. Banks could also be exposed to transition risks stemming from a reorientation towards a more sustainable and carbon-neutral economy. The authorities deserve credit for being at the forefront of integrating environmental elements into their supervision processes in recent years. More can be done, however, to identify and mitigate financial risks related to climate and environment. Banks and financial institutions need to incorporate the physical risks of climate change into their own risk analysis or stress testing which is currently absent. This includes strengthening data collection and further integrating climate and environmental risks into their supervisory processes, as suggested in the Bangladesh Financial Sector Assessment Program (World Bank 2019).

Substantial efforts have been made to strengthen disaster resilience and introduce several sources of funding to address growing disaster costs, but more remains to be done. There is no comprehensive strategy or regulatory framework for meeting the costs of natural disasters. Disaster response is financed through ex-post domestic sources of funding. While there are many different reserve funds, these are largely multipurpose and fragmented. Catastrophe insurance provides little property insurance and there are no sovereign insurance arrangements. The insurance market does not offer sufficient and sustainable catastrophe-risk coverage or access to reinsurance. As flagged in the 2022 Country Climate and Development Report, less than 1 percent of households have insurance, which results in high expectations for government assistance with recovery (World Bank 2022b).

Microfinance is well-developed but offers limited help to affected households. Further strengthening of the insurance sector, particularly microinsurance regulation and risk analysis, can improve access to and affordability of reinsurance, and provide support to new insurance schemes. Donor aid will play a critical role, but it can be delayed and fragmented. The 2022 Country Climate and Development Report suggests that a strategy for disaster-risk financing that follows a risk-layering approach could reduce the costs of response following a severe disaster (World Bank 2022b).

Key green-finance stakeholders in Bangladesh

The 2020 Bangladesh Climate Fiscal Framework presents information about a wide range of climate-related policies, plans, strategies, and different sources for funding them. The framework partially identifies the demand and supply for climate-related funds, including the resource allocation made by 25 ministries and government agencies, the financial sector, and NGOs and CSOs, among others (MoF 2020). The framework, however, does not present a comprehensive list of sources financing green growth, and important information gaps remain.

In contrast to public finance, private-sector commitments to climate and environmental finance are not well mapped in Bangladesh.

Due to data limitations, it is difficult to ascertain exactly the total amount of green finance being distributed in the country or to calculate the exact gap that needs to be closed. Through government budgets, trust funds, lending from banks and financial institutions, and refinancing schemes, the estimated total amount of public finance directed to projects and initiatives related to climate change, sustainability, and green growth was around US\$ 16 billion between 2009 and 2021.

Regarding green banking, the Bangladesh Bank has led the country through innovative regulations, policies, and incentives. Through its Sustainable Development Department and with technical support from the International Finance Corporation (IFC), the BB issued its Green Banking Policy Guidelines for banks in 2011, and for non-bank financial institutions and new banks in 2013, and a Sustainable Finance Policy for Banks and Financial Institutions in 2020. Through these measures, the BB has established targets for direct green and sustainable finance at 5 percent and 15 percent of total funded loan disbursements or investments made by banks

and financial institutions, respectively.¹⁶ Loans and investments are being directed to projects and initiatives in renewable energy, energy efficiency, alternative energies, waste management, recycling, recyclable products, and green brick manufacturing, among others. There are gaps in regulatory and supervisory processes, however, and non-compliance is inconsequential. The BB should strengthen its regulatory and supervisory activities in this line and prepare relevant circulars and guidelines.

Long-standing banking sector vulnerabilities, magnified by COVID-19, impede efficient channelling of savings to green, productive investments. Chronic asset-quality problems, low levels of capital, and weak governance constrain bank lending and present substantial stability risks. Most banks are controlled by owners of large business groups and politicians, and are heavily engaged in related party lending, diverting scarce financial resources from the most productive use. The strong presence of the state in the financial sector, both through the

¹⁶ “Green finance aims to reduce negative externalities and/or promote positive externalities within the scope of the environment. Aims include the adoption of greener technologies through lending products and other financial instruments made available by banks and financial institutions, with the idea of increasing the level of financial flows from the public, private, and not-for-profit sectors to sustainable development priorities. Sustainable finance includes green finance, which is one of the sustainable finance components along with agriculture, cottage, micro, small and medium-sized enterprises (CMSME) and socially responsible finance linked to sustainability” BB (2020).

ownership of underperforming state-owned banks and the interventions such as interest rate caps, further contributes to the crowding out of scarce resources from the private sector. In the meantime, and as mentioned in the 2022 Bangladesh Country Economic Memorandum (World Bank 2022a), the existing regulatory and supervisory framework for banking sector still needs to be aligned with international good practice to address the existing vulnerabilities and promote bank financing of underserved market segments such as MSMEs.

Bangladesh lags other emerging markets and developing economies in its volume and range of green-finance instruments because of structural weaknesses in its banking system. For the 2021 fiscal year, the share of green finance was 4.41 percent (US\$ 1.2 billion) of the total term-loan disbursement. This is a sharp increase over previous years (Figures 5.1 and 5.2), but, as mentioned in the 2022 Country Climate and Development Report, this is low compared to emerging markets where the average is about 7 percent (World Bank 2022b) The pipeline of green projects is lean, and financial institutions have difficulty identifying green assets and projects due to a lack of clear standards and labels. The banks also rely on short-term deposits for funding, which does not position them well to finance climate projects, most of which are long-term ones. Furthermore, even if banks were to meet the green-finance target, this would amount to financing of around US\$ 600 million

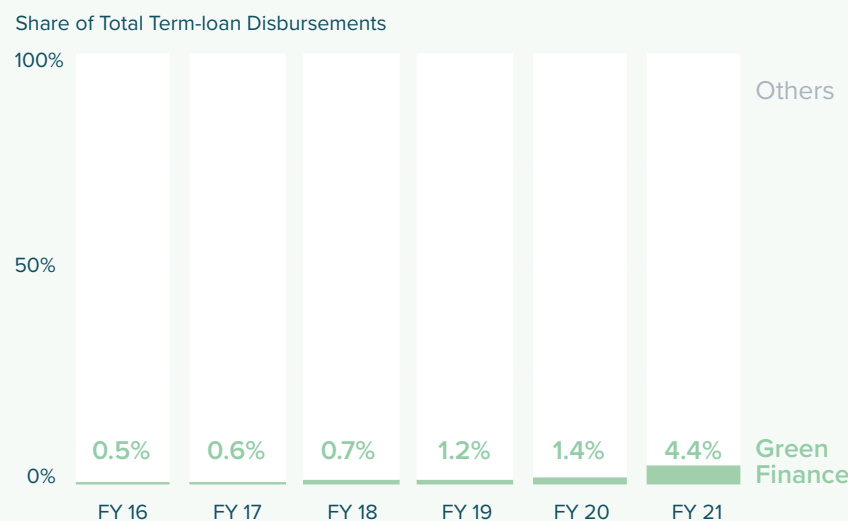
per year, a small dent in the financing gap, as highlighted in the 2022 CCDR (World Bank 2022b). The 2022 Bangladesh Country Economic Memorandum highlights that developing capital markets should be among the top policy priorities to unlock long-term finance for green investments (World Bank 2022a).

The Bangladesh Bank has also pioneered the use of green central banking as an instrument to operate different green funds at concessional rates.

The BB has, for example, supported multiple green-refinancing schemes with its own resources and development-partner financing to provide concessional loans to eligible green investments. This includes a general scheme of Tk 2 billion (approximately US\$ 18 million) and a scheme for Islamic banks and financial institutions for investment in 51 green products/ initiatives in eight categories. Also included are a Green Transformation Fund (GTF) of around US\$ 400 million to support export-oriented industries access finance in foreign exchange for importing capital machinery and accessories for environment-friendly investments, and a US\$ 50 million Asian Development Bank (ADB) brick-kiln project. When loans are tagged to these items, banks can obtain funding at a 5 percent interest rate with the BB and are allowed to charge a maximum of 9 percent interest—and in some cases, 8 or 7 percent. The BB has also introduced a refinancing scheme for shariah-based financial institutions to encourage shariah-based investors to be more involved in green projects.

Figure 5.1 Bangladesh, Green Financing's Share of Total Term-loan Disbursements, Financial Years 2016–2021, percent

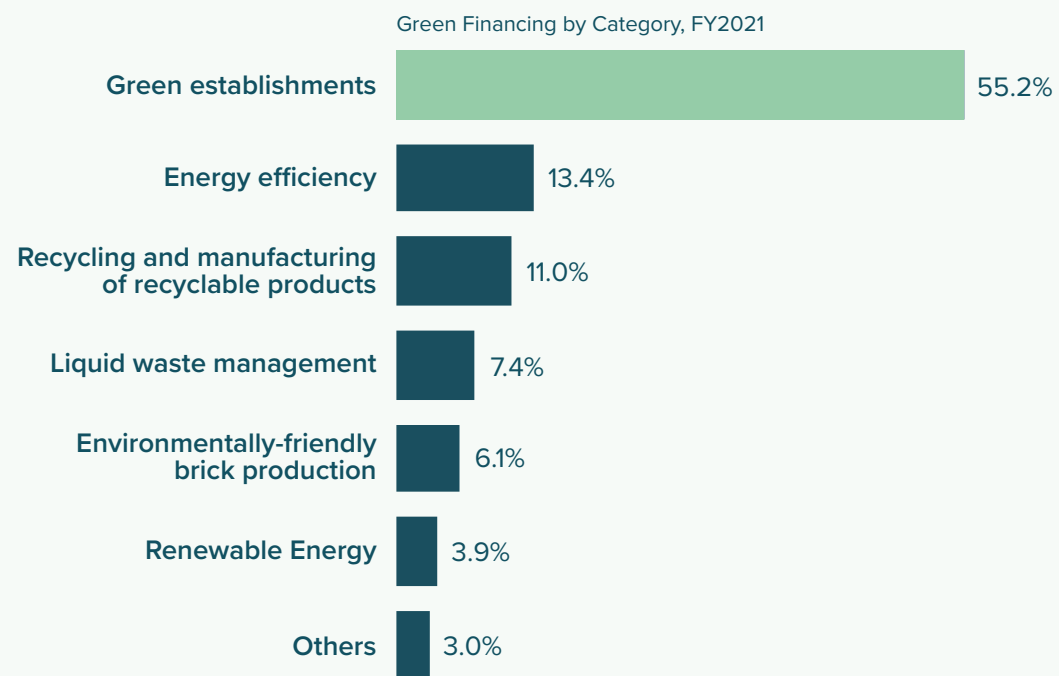
Loan disbursements for **green finance** have been steadily rising in Bangladesh



Source: BB (2022)

Figure 5.2 Bangladesh, Green Financing by Category, Financial Year 2021, percent

Green financing funding in FY21 mostly went to **green establishments projects**



Source: BB (2022)

Note: Others includes green CMSMEs, agriculture, solid-waste management, socially responsible financing, and alternative energy.

The government remains the most relevant source of financing for green growth and environmentally sustainable development. In 2009, it created the Bangladesh Climate Change Trust Fund from its resources to combat climate change impacts in the country. The fund received US\$ 453 million and helped to implement the Climate Change Strategy and Action Plan 2009. In 2021, at least 7.1 percent of the government budget, 0.8 percent of the country's GDP, was directed towards addressing vulnerabilities related to environmental sustainability, adaptation, and mitigation. The thematic areas in which these resources were invested included food security, social protection, and health; comprehensive disaster management; infrastructure; research and knowledge management; mitigation and low-carbon development; capacity building; and institutional strengthening (MoF 2020). The total public spending of the core ministries dealing with water, land, and environment-related services constituted about 0.39 percent of GDP that same year. Although these have been important efforts, more can be done.

Despite the fact that carbon finance could provide additional opportunities to attract resources to foster climate-related projects, the government has not made enough use of the Clean Development Mechanism under the Kyoto Protocol. Between 2004 and 2022, Bangladesh submitted 21 projects, which included certified emission reductions (CERs) of 8 MtCO₂eq, in renewable energy, biogas, and brickmaking.

Since 2006, Bangladesh has sold 2.53 million carbon credits, equivalent to around US\$ 17 million at current exchange rates, through the Infrastructure Development Company Limited (IDCOL) (Rahman 2023). In the NDCs' update, the government committed to the promotion of carbon financing to reduce industrial energy intensity and promote green industry (MoEFCC 2021). The Mujib Climate Prosperity Plan also identifies carbon finance as a potential source of investment in adaptation and mitigation activities and includes the creation of a National Carbon Finance Coordination Hub to attract investment from the voluntary carbon market (GoB 2021). As a new market framework for carbon financing is emerging under the Paris Agreement (Article 6), voluntary carbon markets are starting to gain momentum and will become an important source of financing for green investment in countries such as Bangladesh, thus contributing to the achievement of the emissions reductions and environmental goals set out in the NDC and other plans. Viet Nam's emissions reduction-linked bond provides an example of what could be achieved with carbon finance (Box 5.2).

Box 5.2

Emissions-Reduction-Linked Bond in Viet Nam

The World Bank recently priced a five-year US\$ 50m emissions-reduction-linked bond to finance low-carbon development projects in Viet Nam that generate carbon credits, an important step towards the achievement of carbon neutrality in the country by 2050. Proceeds from the bond aim to support the manufacture of 300,000 water purifiers and distribute them to approximately 8,000 schools and institutions in the country. In addition to reducing greenhouse gas emissions by almost 3 MtCO₂ over 5 years,¹⁷ the purifiers will help improve air quality, reduce associated health impacts, lower fuel costs and the effort previously required to purify water, and help reduce deforestation. Around 2 million children are expected to benefit from access to the resulting clean water. Investors will receive semi-annual coupon payments linked to the issuance of verified carbon units (VCUs) by the water-purifier project. In this way, the emissions-reduction-linked bond will help solve the timing mismatch, in which projects need funding up-front to finance capital and operating expenses by making available financing from investors looking to support low-carbon development projects that generate carbon credits in a predictable manner.

Source: <https://www.worldbank.org/en/news/press-release/2023/02/14/emission-reduction-linked-bond-helps-provide-clean-drinking-water-to-two-million-children-in-vietnam>

¹⁷ With the purifiers, the need to burn biomass to boiling water for safe consumption will be reduced.

Equity investors, institutional investors, and international organizations are fundamental to funneling green financing towards public and private green activities. In Bangladesh, these actors play an essential role in supplying green finance. Sources include funding windows such as those provided by the Green Climate Fund, which has financed projects totalling US\$ 368.6 million through grants and co-financing. Between 2010 and 2017, the Bangladesh Climate Change Resilience Fund, established by the government, development partners, and the World Bank, disbursed US\$ 71.13 million on mitigation, recovery, restoration, climate resilience, and reforestation (MoF 2020; World Bank 2012). In 2010, Bangladesh received US\$ 50 million in grant funds and US\$ 60 million in near-zero-interest credits to pilot climate-resilience strategies from the Pilot Program on Climate Resilience (PPCR) (Climate Funds Updates 2008). This was leveraged with an additional US\$ 515 million from the ADB and the World Bank for climate proofing coastal embankments (Khan 2010). In 2019, Bangladesh also received a grant of approximately US\$ 10 million from the Global Adaptation Fund for a project to enhance the climate resilience of vulnerable communities living on coastal islands and riverine chars (riverine sand and silt landmasses). Finally, different multilateral organizations, such as the World Bank and the ADB, also provide multimillion-dollar grants and concessional loans to fund projects in renewable energy, adoption of environmentally sustainable

practices, and climate-resilient infrastructure, among others, that are part of their international-development agendas with Bangladesh.

Bangladesh also has experience with instruments such as green bonds, green concessional loans and grants, green fiscal policy, and green central banking. These instruments, however, face different barriers and limitations that, if not addressed, could slow the advancement of green growth in the country. With total bond issuances at 5 percent of GDP in 2019, Bangladesh currently lags India and other emerging markets in developing long-term green finance instruments. Parts of this lag include Bangladesh not issuing its first two corporate green bonds until 2022, and the lack of national guidelines on green bonds, as mentioned in the 2022 Bangladesh Country Economic Memorandum (World Bank 2022a). The lack of a pipeline of green projects, and the absence of standards and guidelines defining technical specifications and the eligibility of projects and initiatives help explain why only a handful of initiatives has been funded through green bonds (Vivid Economics and Climate Bonds Initiative 2019; UKaid 2017). Although the BB has proposed a green bond taxonomy, i.e., a guide to climate-aligned assets and projects which is currently under development, other institutions need to step in to develop, approve, and publish relevant regulations in this area (BB and IFC 2021; BB 2020).


Furthermore, discretionary approval processes for external commercial borrowing limit foreign borrowing and the ability to attract capital from international institutional investors.

Local governments could potentially finance infrastructure by issuing climate bonds. Local governments are, however, limited by capacity constraints and weak creditworthiness. City corporations, which demonstrate better performance in mobilizing their own revenues are increasingly seeking to tap into capital markets to mobilize financing for infrastructure development, for example, Dhaka North City's first municipal bond has been approved, and to deploy PPPs, the Gazipur solid waste PPP, for example, is under development. A more detailed list of relevant stakeholders that could enable green finance in Bangladesh is presented in **Table 5.2**.

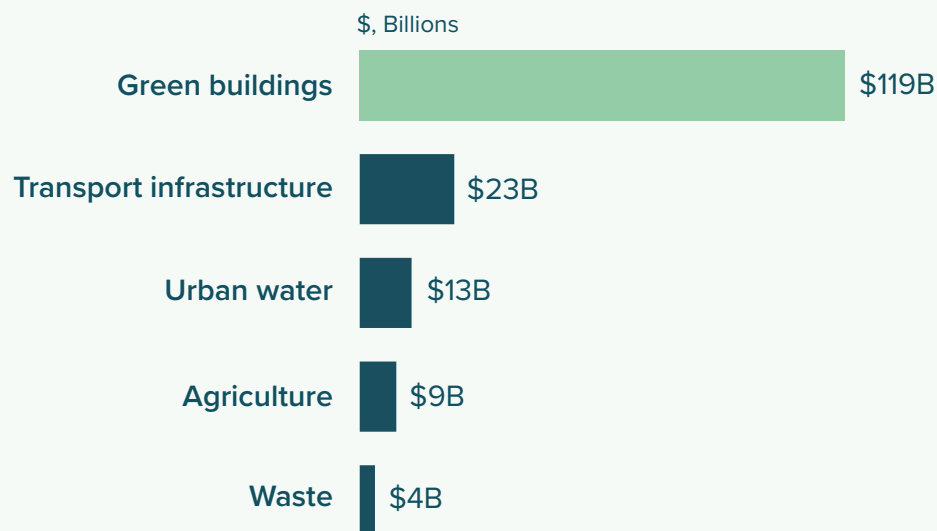
Demand for green financing

Financing climate action alone for Bangladesh is estimated to require at least US\$ 176 billion over the next two decades. Estimates from Bangladesh's NDC to the Paris Agreement indicated that US\$ 67 billion in funding was needed for the country's climate-adaptation measures between 2015 and 2030 (GoB 2020b). As highlighted in the 2022 Country Climate and Development Report and the 2021 NDC update, approximately US\$ 32 billion would be required to meet unconditional mitigation objectives and an additional US\$ 144 billion to meet conditional objectives for 2021–2030 (World Bank 2022b). A BB and IFC report mention that an investment of at least US\$ 200 billion¹⁸ for the next two decades is needed for Bangladesh to reach its top-tier climate-mitigation targets and ambitions (BB and IFC 2021) (Figure 5.3)

¹⁸ This amount represents the sum of investment need/opportunity assessments in Bangladesh's green economy from a range of sources. These include the IFC's 2016 Climate Investment Opportunity Report, the investment needs calculated in the Bangladesh Delta Plan, and the projections for future investment in renewable-power generation, combined with IRENA's current estimates of investment costs for such technologies.

 **Figure 5.3** Bangladesh, Climate-Smart Investment Potential, 2018–2030, US dollars billions

Bangladesh's Climate-Smart Investment Potential (2018–30) will invest significantly in green buildings



Source: IFC (2019)

In addition, Bangladesh has a myriad of plans and initiatives that will demand significant economic resources, including the Mujib Climate Prosperity Plan, US\$ 89.7 billion by 2030; and the Bangladesh Country Investment Plan for Environment, Forestry and Climate Change, US\$ 11.7 billion.

Complementary plans and initiatives will also require billions of dollars to be fully implemented. The implementation of the Delta Plan 2100 will require about 2.5 percent of GDP every year until 2030, with its first phase costing around US\$ 37 billion. According to research performed for the Perspective Plan 2041, to achieve green growth, Bangladesh needs to increase its spending on programs related to environmental protection and climate change to 3 percent of GDP by 2031 and to 3.5 percent by 2041 (Ahmad 2017).

Shifting to a green economy may require even more. A forthcoming World Bank Country Environmental Analysis 2023 for Bangladesh estimates the cost of different interventions to address environmental health risks. Addressing household and outdoor air pollution; inadequate water, hygiene, and sanitation; and arsenic contamination of drinking water in Bangladesh will require significant economic resources that could be financed, at least in part, through different green-finance instruments (Table 5.1). An investment opportunity of more than US\$ 4 billion in municipal solid waste management could

help bring collection levels up from 60 percent currently to 80 percent in 2030. Other related investment discussed in the analysis will require more resources.



Table 5.1 Bangladesh, Cost-Benefit Analysis of Major Environmental Health Risk Interventions

PM _{2.5} control measures	Between US\$ 2.8 million (Tk 235 million) and \$161 million (Tk 13,524 million) per year per $\mu\text{g}/\text{m}^3$ of ambient PM _{2.5}
Household air pollution control	Total cost of interventions amounts to Tk 3,958–16,754 per household per year
Drinking-water quality	Tk 1,922–4,119 per household per year, depending on the method
Drinking-water sanitation	2,990 Tk per household per year
Drinking-water hygiene	Tk 7,630 per household per year
Arsenic in drinking water	Tk 2,146–2,745 per household per year, depending on the intervention

Source: World Bank (2023, forthcoming)

Bangladesh's ministries and government agencies involved in the creation and oversight of policies, regulations, and incentives to foster green finance are not coordinated by a dedicated body to secure access to green finance from local and international sources (UKaid 2017). Without such a body, coordination failures and other inefficiencies can arise, making it difficult to advance coherent green finance which connects all the existing elements that could help advance environmentally sustainable development. The lack of a coordinating body also contributes to deficiencies in monitoring and enforcement. Such deficiencies limit incentives for polluting industries to make green investments and improve their environmental performance, and for investors to provide adequate resources for green projects and initiatives.

Climate-friendly green incentives have been created, but evidence of impact is still missing. Table 5.3 lists incentives deployed by the government to foster the adoption of environmentally sustainable technologies, such as value-added tax (VAT) exemptions, tax holidays, and customs-duty reductions. No information, however, is available on how the private sector has engaged with these or on the fiscal and environmental impacts that these incentives have had. An in-depth analysis of existing green incentives could provide guidance about which of them provides better results and opportunities for improvements moving forward.

International green-financing vehicles accessed by Bangladesh

Bangladesh already has experience accessing international green-financing vehicles. The following are examples of some of these vehicles and how they support climate—and environmentally-sustainable-related projects in the country. Establishing more partnerships with international stakeholders and improving the green financing institutional framework in the country could lead to more resources to foster green growth in Bangladesh.

Green Climate Fund

The Green Climate Fund (GCF), a significant global financing mechanism under the United Nations Framework Convention on Climate Change (UNFCCC), has been operational since 2015. It aims to support developing countries in achieving low-carbon, climate-resilient pathways through mitigation and adaptation measures. The fund invests in four transition areas and employs a country-driven approach, aligning projects with national priorities. It promotes integrated strategies, innovation, and private-sector involvement to maximize co-benefits.

The GCF follows a balanced allocation, earmarking funds for adaptation and mitigation, with 50 percent allocated to developing countries. Bangladesh has engaged with the GCF, with the MoF serving as the National Designated Authority. Several projects have been approved, and institutional capacity-building programs have been implemented. As of 2023, the GCF has committed US\$ 8.9 billion in 177 projects across almost 150 countries, with US\$ 351.1 million approved for Bangladesh across five projects.

Box 5.3

The Relevance of the Green Climate Fund for Agriculture and Food Security

The GCF has eight results areas: (a) low-emission energy access and power generation; (b) low-emission transport; (c) energy-efficient buildings, cities, and industries; (d) sustainable land use and forest management; (e) enhanced livelihoods of the most vulnerable people, communities, and regions; (f) Increased health, wellbeing, and food and water security; (g) resilient infrastructure; and (h) resilient ecosystems. Food security is explicitly considered among the results areas. At the same time, other results areas also bear on climate-resilient agricultural development and food security.

The GCF exercises a principle of country ownership, whereby any intervention financed by the Fund must be in line with various national policies, plans and strategies. As agriculture is explicitly considered as a focus sector across several national plans and strategies on climate change, there is a scope for additional projects to be supported.



The International Fund for Agricultural Development and the Adaptation for Smallholder Agriculture Program

The International Fund for Agricultural Development (IFAD) is a specialized United Nations (UN) agency supporting agriculture and rural development in developing countries. It has mobilized US\$ 23.2 billion for projects benefiting 518 million people worldwide. It focuses on improving access to finance, markets, technology, and information for the rural poor, promoting gender equality, building local capacity, and enhancing resilience to climate change. Its operations are financed by member-state contributions, loans, investment, and special contributions. In Bangladesh, IFAD has carried out 35 projects worth US\$ 2.54 billion, with a focus on climate adaptation, market access, and empowering marginalized groups. The Adaptation for Smallholder Agriculture Program (ASAP) is a flagship climate-finance initiative. Bangladesh has implemented one project under the ASAP, and a new phase (ASAP+) with a finance target of US\$ 500 million is in development, offering further support for agricultural development and food security.

Box 5.4

The Relevance the International Fund for Agricultural Development and the Adaptation for Smallholder Agriculture Program for Rural Development

The IFAD is the only multilateral development institution that focuses exclusively on transforming rural economies and food systems. The ASAP fund in particular allows IFAD country programs to design projects from a climate-informed perspective and leverage resources for technical assistance. In the future, ASAP will ensure that approaches for addressing climate-related risks are integrated into all of IFAD's portfolio of loans and grants. Supporting smallholder farmers and marginalized communities, such as women and rural communities, is central to IFAD and ASAP's vision. This is especially pertinent for building the resilience of those who are most vulnerable.

The Global Environment Facility and the Small Grants Program

Global Environment Facility (GEF) is an independent international cooperation entity established in 1991, on the eve of United Nations Conference on Environment and Development (UNCED). The GEF was established with a view to help developing countries and countries with economies in transition meet the objectives of international climate change conventions, while enabling economic growth. The Facility operates the GEF Trust Fund, administers several other trust funds such as the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF), and also acts as an interim secretariat to UNFCCC's Adaptation Fund. The GEF Trust Fund is resourced by financial contributions from 40 donor countries, and it represents the longest standing dedicated public climate-change fund. Replenished every four years, the GEF Trust Fund has just come to the end of its seventh investment cycle period, GEF-7 for 2018–2022, for which a total of \$4.1 billion was pledged.

The Small Grants Program (SGP) is implemented by the United Nations Development Programme (UNDP) and executed by the United Nations Office for Project Services (UNOPS). It employs a decentralized and country-driven approach by setting up country program teams made of up of a national coordinator, a programme assistant, and a national steering committee. In addition, each country is expected to develop Country Programme Strategy (CPS) in alignment with the SGP global strategic framework and country-specific needs and conditions. Bangladesh is presently in the process of becoming a participating country under the program. Since 2019, the Government of Bangladesh has been liaising with the GEF Secretariat with an interest to join the SGP. In August 2019, the first appraisal mission was completed, and an application package was submitted to the GEF Secretariat in June 2020. Currently, recruitment of country program teams is underway.

Box 5.5

The Relevance of the Global Environment Facility and the Small Grants Program for Nature-based Solutions

Small SGP offers a window through which NGOs can apply for small grants to undertake climate-relevant agriculture projects at the local level. Through these grants, NGOs and community-based organizations (CBOs) can undertake various interventions such as training and capacity building of farmers. Small grants can also diversify livelihood opportunities for farmers affected by climatic impacts.

Considering the growing recognition of locally led action and nature-based solutions in supporting climate action and sustainable development, particularly in the context of COVID-19 recovery, the SGP is likely to become a highly promising avenue for climate financing in Bangladesh once it becomes part of the program.

The United Nations Capital Development Fund's Local Climate Adaptive Living Facility

The United Nations Capital Development Fund (UNCDF) is an autonomous organization created by the UN in 1966 with the aim of supporting economic development in developing countries by supplementing existing sources of capital assistance with grants and loans. It is resourced entirely by voluntary contributions from UN member states, multilateral organizations, charity foundations, and various other sources. The UNCDF works closely with UNDP and other UN organizations to help developing countries realize the SDGs.

The Local Climate Adaptive Living Facility (LoCAL) mechanism, designed and hosted by the UNCDF, was first introduced to Bangladesh in 2014 with an initial rollout of **performance-based climate resilience grants** to three local governments. In Bangladesh, local governments, both at the upazila parishad (subdistrict) and union parishad (grassroots) level, are mandated to perform important functions related to disaster preparedness and management and support local infrastructure development and the delivery of essential services to local communities. The aim of LoCAL is to ensure that planning and investments made by these local governments are resilient to climate change impacts. The country is currently at the Phase-II stage, and as of January 2020, the program has engaged 71 local governments in the

country and delivered more than US\$ 2 million in grants across 263 small-scale climate resilience investments. The facility has made vital contributions to mainstreaming climate-change resilience within local-level development plans and programs and has also helped strengthen the overall fiscal transfer system for climate funds in the country.

In Bangladesh, most projects targeting food security and agricultural adaptation are executed at the local level, and local governments are typically mandated to oversee the implementation of these interventions. Most funds from international and national sources are, however, typically channeled through central government, and while local governments possess better understanding of local needs and priorities, they are usually unable to exercise influence or control over the design and delivery of such interventions. The LoCAL facility offers an avenue to implement climate-adaptation projects that adequately and accurately respond to the needs and priorities at the local level—vital in ensuring the climate resilience of the agriculture sector.

Box 5.6

Local Climate Adaptive Living Facility's Alignment with Bangladesh's Climate Change Strategy and Action Plan

The LoCAL menu of investments is aligned with the Bangladesh's Climate Change Strategy and Action Plan (BCCSAP), which highlights food security as a key thematic area. Many agriculture-focused interventions in Bangladesh are undertaken at the local level, under the supervision and authority of local governments and actors.

Domestic green financing vehicles in Bangladesh

Existing green financing vehicles could foster the flow of resources to support the green growth agenda in Bangladesh. The following are examples of financing vehicles that have been used in Bangladesh for different climate- and environmentally-sustainable-related projects. More can be done to leverage additional resources and increase the impact of the green initiatives financed by them.

Carbon Financing in Bangladesh

The Infrastructure Development Company Limited is a public non-bank financial institution that specializes in the financing of medium to large-scale infrastructure, energy efficiency, and renewable energy projects in Bangladesh. It has a strong pipeline of climate change projects focused on both adaptation and mitigation in various industries, such as cement, bricks, textiles, and oil. The company is registered under the UNFCCC's Clean Development Mechanism (CDM) to sell carbon credits offset from green energy projects and, through this mechanism, has financed projects that accumulate carbon credits thanks to their contributions to lower greenhouse gas emissions. Since 2006, IDCOL has sold 2.53 million carbon credits worth close to US\$ 17 million mainly from projects related to improved cookstoves, solar-home systems, and

brick manufacturers that adopt clean technologies. Moving forward, IDCOL and other public and private financial institutions could expand the use of carbon credits to finance emissions reduction projects. These carbon credits could then be traded and sold in Bangladesh and other countries to contribute to the reductions needed to hit Kyoto targets, NDCs, and other national targets. For example, RMG companies in Bangladesh could be potential buyers of carbon credits from international clients who need to lower their emissions and improve their environmental sustainability.

A broader use of carbon financing could allow Bangladesh to fund energy-efficiency initiatives to reduce the demand for energy from its largest industrial consumers—RMG and textile, steel, cement, and fertilizer-producing industries (Hossain et al. 2017). Currently, Bangladeshi companies can access voluntary carbon markets, but they need more guidance to use this financing mechanism, connect with stakeholders interested in carbon emission offsets, and get access to green finance to fund their projects. The government needs to integrate carbon pricing into its climate strategies and finance some of its environmental initiatives through decarbonization projects and carbon-pricing instruments. Bangladesh has already joined the Climate Market Club initiated by the World Bank. This provides opportunities for national governments to jointly develop and agree to follow common principles to operationalize climate markets under Article 6.2 of the Paris Agreement. The government has

also submitted an expression of interest to apply for grant funding to build readiness for carbon pricing. These readiness grants will be provided from the Partnership for Market Implementation (PMI), a multi-donor trust fund launched by the World Bank in January 2021. The DoE will act as the Designated National Authority (DNA) for recommending projects to access the international carbon market.

Green Transformation Fund

Bangladesh Bank's GTF, a US\$ 200 million refinancing scheme for environmentally-friendly initiatives, was launched in 2016. Although initially the fund was only available for export-oriented textile, leather, and jute enterprises, it expanded its scope in June 2019 to include all manufacturing and export-oriented industries. The GTF facilitates access to finance in foreign exchange for importing capital machinery and accessories for environmentally friendly initiatives, such as water-use efficiency in wet processing, water conservation and management, waste management, resource efficiency and recycling, energy for renewable sources, energy efficiency, heat and temperature management, air ventilation and circulation efficiency, and work-environment improvement initiatives. In 2020, EUR 200 million were added to the existing US\$ 200 million that the fund had originally. The disbursement from GTF up to FY2022 was US\$ 138.75 million in 43 projects and EUR 61.72 million in 26 projects (BB 2022).

Bangladesh Climate Change Trust Fund

The Bangladesh Climate Change Trust Fund (BCCTF) was established in 2009 to support the implementation of the BCCSAP. It is funded by the government's non-developmental budget, with two-thirds allocated for projects and the rest reserved for emergencies. The fund is managed by the Bangladesh Climate Change Trust (BCCT) and governed by an independent board of trustees and a technical committee. It has supported 788 projects across various sectors, with more than 90 percent implemented by government ministries and the rest through an NGO funding window. The fund aligns with the BCCSAP's six thematic areas, with programs focusing on food security, agricultural adaptation, infrastructure, and more. Less than 10 percent of projects have, however, been directed towards food security and agricultural adaptation, despite the sector's vulnerability to climate change.

The Government of Bangladesh's Public-Private Partnership Authority

Bangladesh's economic growth over the years can be attributed largely to the booming private sector. As such, the government has placed significant emphasis on public-private collaboration for advancing the country's socioeconomic development. In 2010, the Policy and Strategy for Public-Private Partnership was issued.

Subsequently, a PPP Authority was set up under the Prime Minister's Office to help facilitate the realization of PPP projects in Bangladesh.

The PPP Authority aims to provide an enabling environment for government institutions to engage in PPPs for the delivery and implementation of sustainable public-service infrastructure in the country in an efficient, cost-effective manner. It supports line ministries to identify, develop, tender, and finance high-quality PPP projects, and provides a professional, transparent, centralized portal for interested investors and lenders.

Since its inception, the Authority has set up two catalytic funds to help incentivize private-sector investment in public-service infrastructure. The Public-Private Partnership Technical Assistance Fund (PPPTAF) was set up with the aim of providing funding support to sanctioned PPP projects for early-stage project-development activities which include project identification, pre-feasibility studies, detailed feasibility studies, documentation and evaluation, and any other subsequent activities in relation to the project prior to signing the contract and achieving project finance closure with the awarded tenderer. The fund has been initially capitalized by a grant of Tr 2 billion (approximately US\$ 23 million) from the government. It will be supplemented through budgetary support from the MoF where needed, and development partners and other national and international institutions also have the scope to contribute.

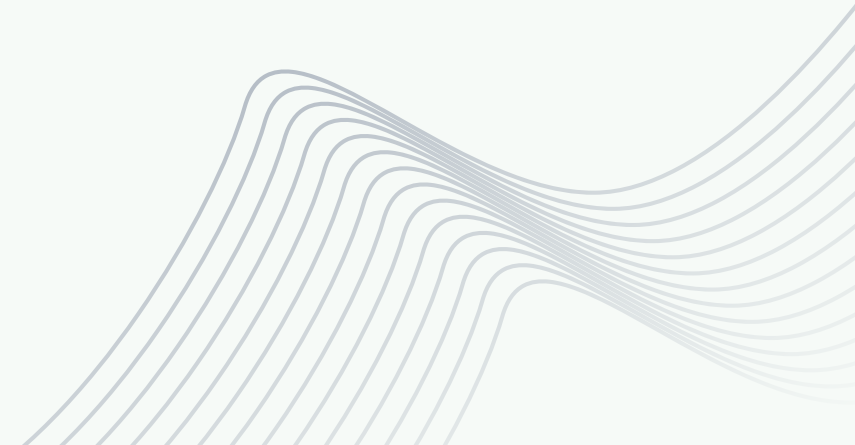
Box 5.7


The Relevance of Public-Private Partnerships for Climate Adaptation

By combining public-sector accountability and private-sector expertise, PPPs can play a critical role in advancing agricultural development and food security in the face of climate change and COVID-19 in Bangladesh. Several countries have had success in executing PPP projects to support the agricultural sector. These include improved access to knowledge and technology for farmers, investment in water infrastructure to protect crop production, setting up post-production storage facilities, undertaking R&D on climate-resilient seeds and crop varieties, strengthening the value chain and so forth.

The second fund, the Viability Gap Fund (VGF) will provide supplementary government financing to projects that have high social and economic benefits but may not be fully financially viable on a commercial basis. The aim is to attract greater private investment for infrastructure development in the country. Resources from the VGF can be used to share the up-front cost of a project, and also to help subsidize PPP project costs on an annual basis.

Availability of long-term finance is vital for encouraging private-sector investment. To facilitate access to long-term finance, the government has mandated two non-banking financial institutions to provide funds to private investors for the financing of infrastructure and PPP projects. These are the IDCOL and the Bangladesh Infrastructure Finance Fund Limited (BIFFL). The IDCOL is capitalized mainly through the contributions of multilateral donors, while the BIFFL is capitalized through the provision of ring-fenced budgetary funds from thAs of May 2021, 79 projects had been undertaken with support from the PPP Authority and are at different stages of the project cycle. The projects span several sectors including transport, power, industry, health, IT, and urban development.



 **Table 5.2** Bangladesh, Stakeholders that can Enable Green Finance

Government sets policy and regulatory frameworks and implements them

The MoF is responsible for state budget, taxation, economic policy, and general financial policy. The Finance Division oversees the Climate Fiscal Framework, and the Economic Relations Division mobilizes external resources for socioeconomic development of the country and manages the GCF. The MoF is key to developing, approving, and publishing relevant regulations to advance green financing instruments, such as green bonds.

The BB is the central bank and chief regulatory body for the country's monetary and financial system. It oversees comprehensive green banking as well as sustainable finance initiatives to support and promote environmentally responsible financing by banks and financial institutions through regulations, policies, and incentives. It also operates different green funds, a refinancing mechanism for green projects and initiatives, and a credit-guarantee scheme for heavily-polluting industries.

National Board of Revenue (NBR) is the apex authority for tax administration. It formulates tax policies and tax laws and collects tax revenues (for example, VAT, income tax, and customs duty).

Bangladesh Investment Development Authority (BIDA) is the investment promotion agency of the government. The Authority promotes and facilitates private direct foreign investment and advocates business-friendly policies. It assists investors through:

- approval of green-field and brown-field projects and joint ventures with local companies;
- approval of foreign investment in financial products; for example, green bonds and loans from foreign sources requested by local companies;
- facilitating the import of production equipment and other inputs; and
- assisting in obtaining different permits and approvals to operate.

Ministry of Power, Energy and Mineral Resources (MOPEMR) is the main body creating an enabling policy environment to promote green energy in Bangladesh. The MOPEMR has drafted the National Solar Energy Roadmap, 202–2041 to frame a long-term vision for the nation and set possible capacity targets for the country's solar energy initiative. The MOPEMR has also prepared Energy Efficiency and Conservation Master Plan up to 2030.

Ministry of Housing and Public Works (MoHPW) provides housing and regulates the state construction activities in the country. Its newly framed Bangladesh National Building Code 2020 (published in February 2021), which includes a chapter on energy efficiency and sustainability, could be the starting point for formulating comprehensive green building guidelines.

The MoEFCC is the national focal point for issues related to the environment and climate change. The MoEFCC can formulate policy guidelines and regulatory frameworks toward safeguarding the environment and promoting green growth.

The MoC formulates rules related to quality control, standardization and marking of exportable agricultural products, tariffs, and export policies including protocols, treaties, agreements, and conventions bearing on trade with foreign countries.

The MoI is in charge of advancing the country's industrial policy by promoting environmentally sustainable industrial growth and productivity; developing CMSMEs; standardizing, examining and certifying products; and regulating eco-friendly industrial infrastructure.

The MoA oversees the development of policies, plans, and regulations for sustainable agricultural development. The MoA also supports the implementation of new technologies and practices to boost agricultural production in an environmentally sustainable way.

Financial Institutions provide green finance to projects and initiatives

The BSEC is the regulator of the country's capital market. It sets rules for intermediaries, asset-backed securities, issuance of capital, private placement and debt securities, and public-issue rules. Alongside the MoF and the BB, the BSEC develops guidelines and standards for different green finance instruments, such as green bonds, to foster investments in green projects.

The DSE and CSE promote green criteria among listed companies to cater to green investors. The DSE and CSE are positioned at the intersection of investors, companies, and regulators.

Private commercial banks and Financial institutions provide resources to borrowers who are implementing green projects or initiatives related to energy efficiency, renewable energy, waste management, and recycling, among others. Private commercial banks and financial institutions are required to direct 5 percent of total funded loan disbursement/ investment to green finance, and 15 percent to sustainable finance.

State-owned commercial banks and financial institutions help borrowers obtain domestic green finance and help enhance market alternatives for domestic low-carbon and environmentally resilient development projects and initiatives, demonstrating to private actors that there are commercial opportunities for green financing.

One of the most relevant state-owned financial institutions is the PalliKarma-Sahayak Foundation (PKSF), an apex development organization, established by the government in May 1990, for sustainable poverty reduction through employment generation. The PKSF provides financial assistance and institutional development support for implementing sustainable, inclusive financial programs to reduce poverty by creating productive employment opportunities for the moderately poor and ultra-poor, small, and marginalized farmers and micro-entrepreneurs.

The SME Foundation was established by the government through the Ministry of Industries as an apex institution for SME development in the country. The SME Foundation's major activities are:

- implementation of SME policy strategies adopted by the government;
- policy advocacy and intervention for the growth of SMEs;
- facilitating financial support for SMEs;
- providing skills development, and capacity-building training;
- facilitating adaptation with appropriate technologies and access to IT; and
- providing business support services; and so forth.

The SME Foundation's objectives include planning, programming, and financing interventions for delivery by private-sector organizations; this may include green practices and technologies.

Borrowers

use green finance to create green goods and services

Large private firms: BEXIMCO Group, PRAN-RFL Group, and Walton—three of the 10 largest private firms in Bangladesh—are considered leaders in greening their business portfolios. For example, Walton, a high-tech industry, has adopted environment-friendly technology in producing resource- and energy-efficient electronic products to cater to the needs of overseas markets. It also has a strong presence with white goods in the domestic market. With sukuk, an Islamic (Sharia-compliant) bond, the BEXIMCO Group has undertaken a 200 MW solar power project.

With green bond proceeds, the PRAN Group, Bangladesh's largest food and beverage company, will undertake initiatives such as:

- recycling wastewater;
- climate action through waste decomposing;
- building sustainable communities by providing employment among rural and poverty-stricken communities; and
- preserving life on land through contract-based organic farming.

PRAN RFL, PRAN's plastic goods section, annually recycles 30,000 tonnes of plastic.^b A majority of large private firms in the apparel sector have already greened their garment segments.

State-owned enterprises: in Bangladesh, many big industries are owned by the government. Public resources would be needed to turn these industries green by retrofitting existing technology and increasing energy efficiency in the use of electricity, boiler operations, etc.

A few of these state-owned enterprises, for example, BSEC-run industries, have already shifted to come up with energy-efficient products such as ceiling fans, light-emitting-diode (LED) bulbs, etc. With technical backstopping support by SREDA, public-sector enterprises are adopting energy efficiency in a bid to stay on a low-energy production path.

MSMEs: Bangladesh's private sector consists predominantly of MSMEs, which account for 90 percent of all industrial units and about 25 percent of the labor force. Their total contribution to export earnings varies from 75–80 percent. As Bangladesh promotes green growth, it is an imperative that small and medium-sized industries adopt a cleaner production path with little or no environmental footprints.

Other stakeholders with key roles in green finance in Bangladesh

The BSCIC provides support services to the country's small, rural, and cottage industries. The BSCIC has a country-wide institutional network to accelerate industrial growth through the promotion and extension of small and cottage industries.

IDCOL. The MoF provides on-lending programs through the IDCOL. Areas for which IDCOL provides financing include clean production and energy efficiency measures for the RMG, textiles, brick manufacturing, steel-rolling mills, and cement industries.

Bangladesh Infrastructure Finance Fund Limited (BIFFL). The MoF provides on-lending programs through the BIFFL, which promotes inclusive growth through sustainable infrastructure development as well as eco-friendly investment. With financing from the government, the BB, and other development partners, BIFFL provides financing for utility-scale solar power, green building, energy-efficient technologies, waste treatment and recycling, and other innovative green projects.

Source: World Bank

Note:

a. Dhaka Stock Exchange (2021); BSSNews.net (2021)

b. www.pranfoods.net/news-events/news/pran-rfl-recycles-30000-tonnes-plastic-year



Table 5.3 Bangladesh, Green Finance
Instruments, Policies, Regulations, and Incentives

Green instruments being used in Bangladesh

Green central banking (BB): Revolving finance scheme, guarantee scheme for the brick industry and SMEs; Green Transformation Fund; Green Technology Fund; policies and regulations.

Green banking (banks and financial institutions): A 5 percent and 15 percent minimum target of the total loan disbursement or investment for green finance and sustainable finance, respectively; 10 percent of the corporate-social responsibility (CSR) budget directed to the Climate Risk Fund.

Green grants and concessional loans (NGOs, international and multilateral organizations): Different grants and loans extended on terms substantially more generous than market loans to fund projects in renewable energy, adoption of environmentally sustainable practices, and climate-resilient infrastructure, among others.

Green bonds (BSEC, DSE, and CSE): establishment of two green bonds to finance the expansion of financial services to support SMEs' green projects and other social initiatives; and projects related to wastewater recycling, and climate action through waste decomposition; one sukuk bond to finance 230 MW of solar power generation.

Green fiscal policy (Government of Bangladesh, ministries, and agencies): tax interventions to facilitate mitigation and adaptation, climate-friendly incentives, regulations to reduce pollution, and funding of strategies that address climate change and environmental sustainability.

Bangladesh's green banking policies and regulations

Green Banking Policy for Banks–2011: To promote green banking by a policy and framework for banks.

Environmental Risk Management (ERM) Guidelines for Banks and NBFIs–2011: to encourage banks and financial institutions to better understand environmental and social risks and incorporate appropriate risk-mitigation measures to be able to expand the lending portfolio.

Green Banking Policy for Non-Bank Financial Institutions–2013: to promote green banking by developing a green banking policy and framework for non-bank financial institutions.

Annual Green Finance Target for Banks and Non-Bank Financial Institutions–2014: to establish a minimum target of direct green finance; at 5 percent of the total funded loan disbursement/ investment from January 2016 onwards for all banks and financial institutions.

Climate Risk Fund Policy–2015: to instruct banks and FIs to form the Climate Risk Fund and allocate at least 10 percent of their CSR budget for this. This funding can be done by providing grants or financing at a reduced rate of interest.

Sustainable Finance Unit–2016: to create a Sustainable Finance Unit and a Sustainable Finance Committee inside banks and financial institutions, and to abolish both green banking and CSR units.

Guidelines on Enterprise Security Risk Management (ESRM) for Banks and Non-Bank Financial Institutions–2017: To update the Guidelines on ESRM for Banks and financial institutions along with introducing a risk rating model to evaluate environmental and social risks in the process of credit risk management.

Product Development Policy for Green Finance–2017: to circulate a comprehensive list of product/initiatives of green finance for banks and financial institutions.

Quarterly Review Report on Green Banking Activities–2018: to establish a new uniform reporting format to monitor green banking policy and other regulations.

Investment in Environmentally Friendly Impact Funds–2019: investment by scheduled banks and FIs in any impact fund registered under the BSEC (alternative investment) rules, 2015, and formed for environment-friendly sectors and purposes. Projects in the following categories will be considered as green finance: resource and energy efficiency, renewable energy, waste management and treatment, climate-friendly transportation, protection of women's and children's rights.

Sustainable Finance Policy for Banks and Financial Institutions–2020: the policy includes a sustainable finance taxonomy along with a country perspective green taxonomy, and a comprehensive list of green products/projects/ initiatives and identical areas of sustainable linked finance. This policy also addresses the essential clarity and guidance to identify green and sustainable linked finance.

Sustainability Rating–2020: Banks and non-bank financial institutions are financial intermediaries that are subsequently going to be rated on their performance on environmental, social, and governance attributes, especially on their policies and performances.

Annual Green Finance Target for banks and Non-Bank Financial Institutions–2020: to establish, as a minimum target of direct green finance, 5 percent of the total funded loan disbursement/ investment from September 2020 onwards for all banks and financial institutions.

Annual Sustainable Finance Target for Banks and Non-Bank Financial Institutions–2021: to set a target for banks and non-bank financial institutions of at least 15 percent disbursement of their outstanding loans for sustainable financing.

Existing and possible climate-friendly green incentives^b

Zero import duty on effluent treatment plant (ETP) machinery and chemicals used for effluent treatment (2011).^c

Environment protection surcharge at the rate of 1 percent: imposed on goods produced by the industries polluting the environment (2016).^d

Zero Custom Duty on Biogas digester for biogas plant, LED bulbs, LED tube lights (2017).^e

Zero import duty on import of photovoltaic cells, solar modules, and panels (2017).^f

Zero Supplementary Duty on LED lamp parts imported by industries manufacturing LED lamps (2018).^g

Reduced Company Tax for garments manufacturers that have green building certificate (2019).^h

Tax holiday for green bricks provides incentive to low-carbon-technology brick manufacturing, which reduces GHG emissions.

VAT exemptions at both import and production levels for photovoltaic cells, solar modules, and solar panels; incentivizes low-carbon technology, which reduces GHG emissions. The VAT exemption also helps to reduce cost of solar energy.

VAT exemption at production level for solar batteries (up to 60 amperes): incentivizes use of solar batteries in lighting, motor vehicles, irrigation, boats, and so forth.ⁱ

Concessionary 5 percent custom duty on import for electric cars reduces the cost of procuring and operating electric cars (2018).^j

Solar power companies are allowed to import spare parts for equipment without paying duty, VAT, or the surcharge of up to 10 percent of the total cost of the plant and equipment within 12 years of commercial operations.

Renewable energy equipment exempted from the applicable 15 percent VAT rate.^k

Numerous incentives have been proposed as part of the Climate Fiscal Framework.^l

Monitoring and evaluation of green finance instruments in Bangladesh

BB Annual Report: presents an overview of the performance of the financial sector, financial markets, public finance, etc.

includes a chapter on sustainable banking that consolidates information on green central banking and green banking in Bangladesh during the previous fiscal year. Recent policy developments and consolidated results for banks and financial institutions are presented.

Quarterly Review Report on Green Banking Activities: a mandatory quarterly report that monitors green banking activities and covers all components of sustainable finance under a sustainable finance taxonomy.

Bangladesh Fiscal Climate Framework: tracks climate-related expenditure while estimating potential costs of long-term finance.

Provides principles and tools for fiscal policy making relating to climate, helping to identify the demand and supply sides of climate funds and to ensure that climate fiscal policies are transparent and sustainable in the longer term.

The BSEC monitors projects funded by green bonds based on project's implementation status submitted to the BSEC and to the stock exchange in which its securities are listed, on a half-yearly basis.

More remains to be done regarding mandatory ESG disclosure by bond users, third-party monitoring and verification, and so forth.

Source: World Bank.

Note:

a. BB (2022)

b. MoF (2020)

c. National Board of Revenue (NBR). SRO No. 169-Law/2011/2356/Customs

d. NBR. Notification. Bangladesh Gazette. March 1, 2015

e. Bangladesh Finance Minister's Budget Speech 2016–17

f. NBR. SRO No. 217-Law/2017/55/Customs

g. Bangladesh Finance Minister's Budget Speech 2017–18

h. Bangladesh Finance Minister's Budget Speech, 2018–19

i. Bangladesh Budget 2020–21

j. NBR. SRO No. 156-Law/2016/18/Customs

k. MoPEMR (2013)

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Roadmap
for Facilitating
Green Finance
for Green Growth
in Bangladesh

The background is a dark teal color. On the left side, there are several vertical yellow lines that curve and flow downwards towards the bottom right. On the bottom right side, there are several diagonal yellow lines that curve and flow upwards towards the top left. The overall effect is a sense of movement and flow.


Chapter 6 identifies barriers and bottlenecks that impede the channelling of financial resources to green growth in Bangladesh presents a green-finance roadmap with recommendations to facilitate their flow from suppliers to sectors pursuing finance for green growth.

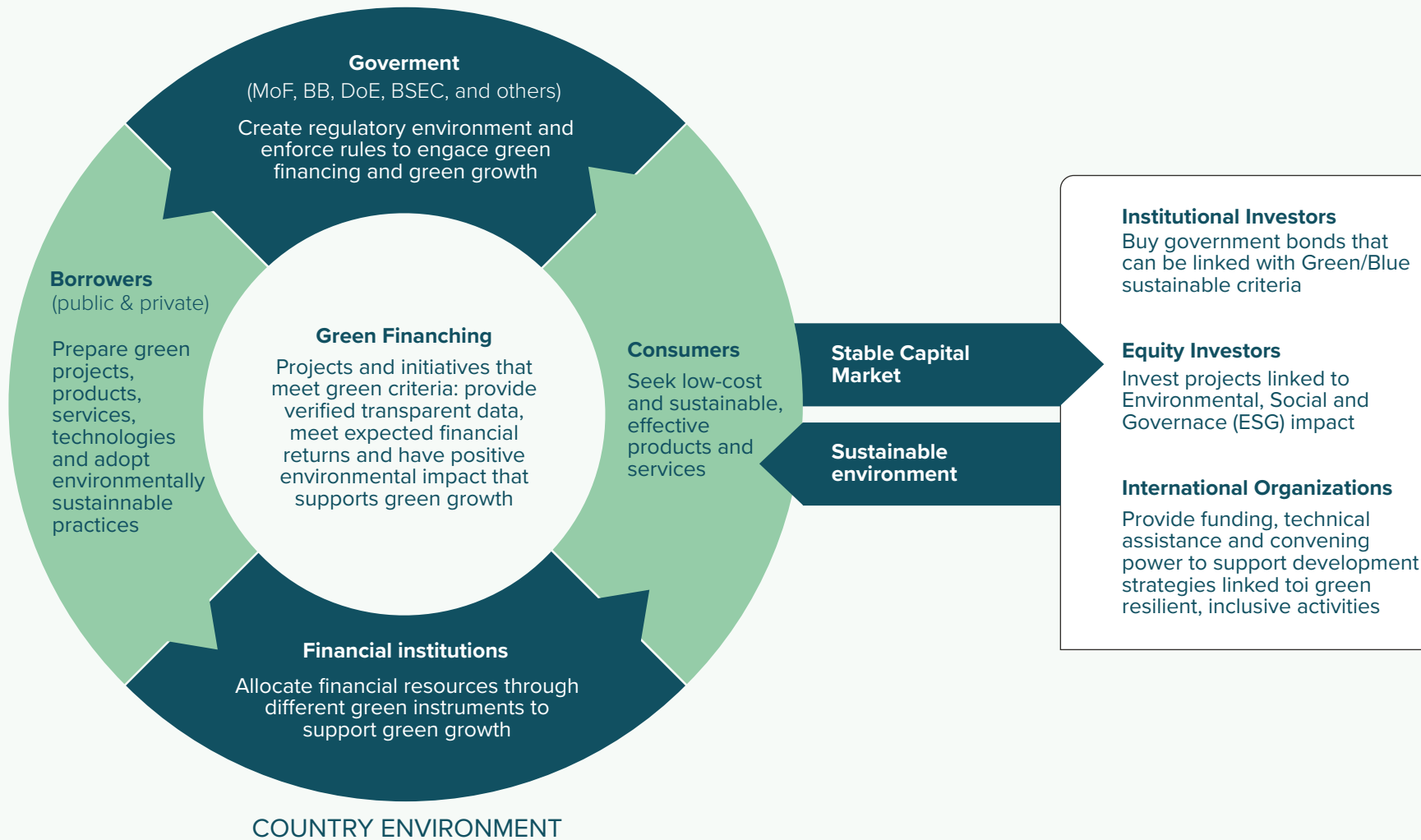
6.1 Methodology



The green-finance value chain as an analytic framework

The objectives of this chapter are to (a) identify the main barriers and bottlenecks that impede the channelling of financial resources towards green-growth projects in Bangladesh, and (b) offer recommendations to address those barriers and bottlenecks. The chapter uses the green-finance value chain (GFVC) as an analytical framework (Figure 6.1). The GFVC is a tool that maps the main stakeholders and processes associated with an environment that enables the flow of green finance, in this case, in Bangladesh. The GFVC includes key stakeholders and their links and helps to identify the bottlenecks those stakeholders face and the roles they could play to foster the channelling of financial resources to environmentally sustainable initiatives. Government agencies, financial institutions, institutional investors, equity investors, international organizations, borrowers, and consumers are all parts of the GFVC.

 **Figure 6.1** The Green-Finance Value Chain is a tool that maps the main stakeholders and processes associated with an environment that enables the flow of green finance



Key components of the green-finance value chain

Government agencies facilitate policies, regulatory frameworks such as pollution limits and green-finance targets; stable capital markets; public financing; and other types of support to advance the financing of green growth in Bangladesh. Various government agencies are parts of the GFVC, including ministries, central banks, public agencies, state-owned companies, the securities and exchange commission, the national board of revenue, and stock exchanges. These agencies create a regulatory environment, enforce rules to enhance green growth, and incentivize participants.

Financial institutions offer diverse financial instruments to create demand and impact, raise capital, and design and provide green financial products and services for clients including borrowers, depositors, and the insured. Financial institutions include banks, investment banks, insurance companies, and brokerage firms.


Institutional investors purchase government bonds that can be linked with green/blue/sustainable criteria. It is widely recognized that a large share of the funds needed for green investments should come from institutional investors such as pension funds, sovereign wealth funds, and insurers (German Development Institute 2016).

Equity investors may seek projects linked to ESG impact, including equity mutual funds; shares; private-equity investment, such as venture capital; retained earnings; preferred shares; and public investment.

International organizations support development strategies linked to green, resilient, and inclusive activities through funding, technical assistance, and their convening power. International financial institutions can help participants in the market, such as local banks, businesses, and individuals, become green by (a) raising awareness regarding green investment opportunities; (b) transferring know-how to commercial banks and businesses to aid them in better evaluating projects for finance; and (c) providing additional sources of funding (Behrens 2021).

Borrowers encompass different scales of businesses such as CMSMEs, large enterprises, start-ups, and entrepreneurs. Borrowers from both the public and private sectors are the main users of green finance. Potential borrowers include both buyers and suppliers of green technologies and services. Polluting industries require funds to adopt green technologies to improve environmental management or green practices, such as pollution abatement, resource-efficient and cleaner production, renewable energy, and smart manufacturing. Enterprises that are green businesses also need finance to develop and supply green products, projects, services, technologies, innovative solutions, or ideas. Borrowers are core elements in forming green markets.

Whether potential borrowers participate in the GFVC can be explained by the challenges that they face. The first group of borrowers (Figure 6.2) lacks incentives and/or the knowledge to go green and the second group lacks resources. Only those wanting to adopt green practices or provide green solutions and are also able to provide adequate business plans are eligible borrowers (the third group of borrowers). To strengthen borrowers' ability to participate in the GFVC, customized support for each type is necessary.

 **Figure 6.2** Categories of Borrowers and the Challenges They Face in Green Financing

CATEGORIES OF BORROWERS

1 LACK OF INCENTIVES/ KNOWLEDGE

Business do not have the incentives and/or knowledge to go green

2 NO ELEGIBLE FOR FINANCING

Enterprises want to go green but lack access to financing

3 BANKABILITY

Enterprises want to go green and have access to financing

Source: World Bank

Consumers create the demand for green finance as buyers of green products, services, and projects. Potential consumers are in the public and private sectors, for example, governments, public institutions, businesses, and households that purchase green solutions such as technologies, services, or products.

To boost green activities and connect suppliers of green financing with borrowers players in the GFVC require clear rules, incentive structures, and the knowledge and capacity to tap into the resources provided to foster green growth. To enable the flow of financing, trust is a prerequisite in the market. This includes a clear taxonomy for green financing, products, and services that is accepted within the landscape.

The government is essential to creating a regulatory and monitoring framework that builds trust and creates incentives for stakeholders to invest in green growth. The government's intervention allows for acknowledging and addressing environmental externalities and creating green markets.

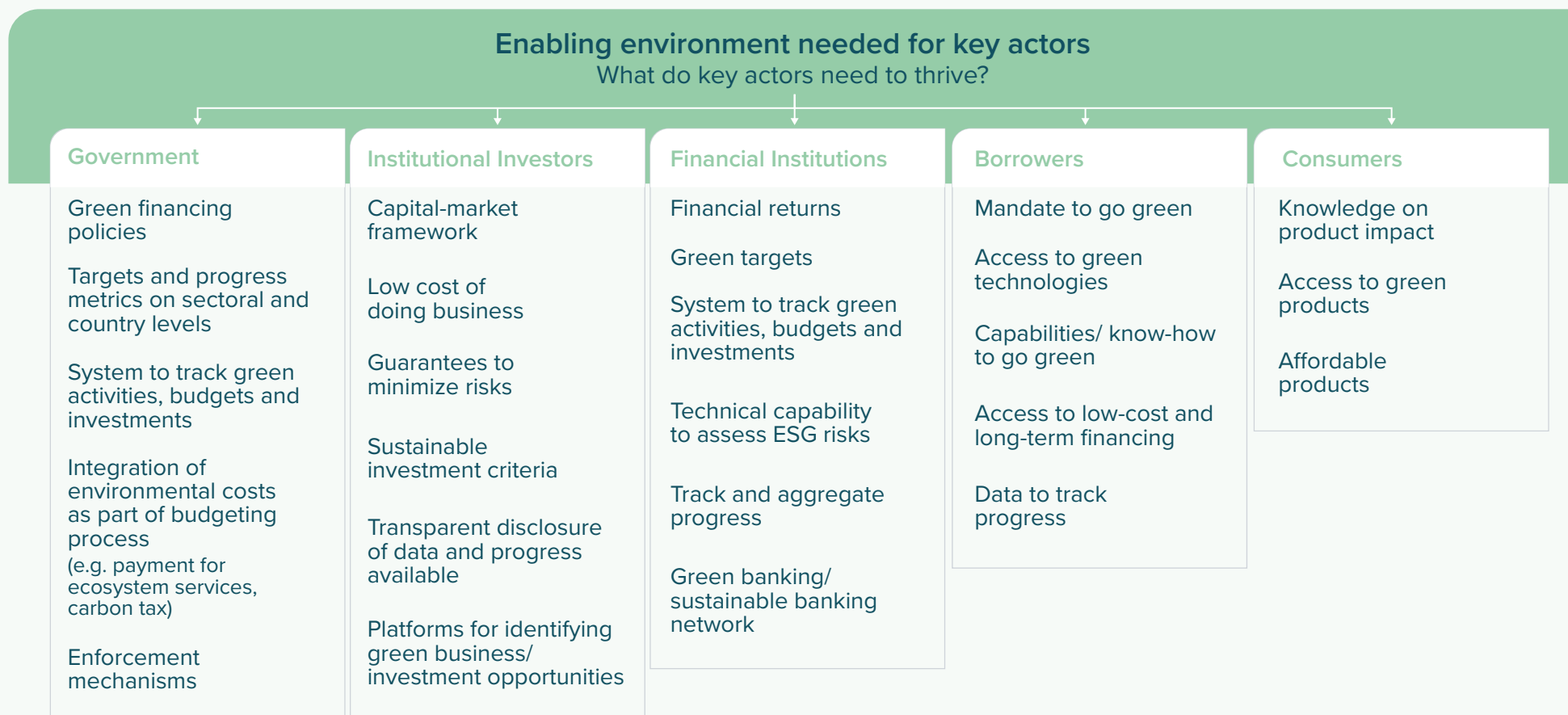
Financiers seek transparent tracking and disclosure of progress on those elements considered green to reduce information asymmetries and, subsequently, perceived risk. Substantial returns are still expected from investments that are considered green or sustainable.

Borrowers need the incentive to adopt green practices, access to technologies, and a simple application process.

With each participant in the GFVC playing their role, a functioning market can be established for consumers, in which they not only have knowledge of a product's environmental impact but also get high-quality and affordable products.

To support green growth, participants along the GFVC require an enabling environment more conducive to connecting the demand for and supply of green finance. Figure 6.3 below presents an inventory of the key components of the enabling environment needed for financing green growth in Bangladesh. These components are elements that need to be in place before each of the main stakeholders of the GFVC can maximize their contributions to the advancement of green finance. Having those key elements in place requires a well-coordinated response from different actors and having proper incentive structures in place.

Figure 6.3 Components of the Enabling Environment Needed for Financing Green Growth in Bangladesh



Using the GFVC as an analytical framework allows (a) an understanding of associated barriers and bottlenecks, and (b) the exploration of solutions to overcome them to finance green growth in Bangladesh. Key to this analysis is evaluating the role each player has in the current financial and economic context for channeling finance to Bangladesh's green projects and products. Examples from the Republic of Korea – a country that has been at the forefront of green growth initiatives and green finance – and other countries are provided to explain the role that adequate policies and institutional structures can play in creating an enabling environment for financing green growth in Bangladesh. Recommendations are proposed to address the challenges and enhance the experience and success of each key stakeholder. Coherent and coordinated efforts from multiple stakeholders are necessary to lead the development of a well-functioning green-finance market to support Bangladesh's transition to a greener and more sustainable economy.

6.2 Applying the Green Finance Value Chain in Bangladesh



To analyze and conceptualize solutions for Bangladesh's challenges in financing its green growth commitment, this report uses the framework of the GFVC. Through this, key actors channelling financing for green projects and initiatives are scrutinized to identify barriers and gaps impeding green-growth financing in Bangladesh. These barriers and gaps are summarized from the borrowers', financial institutions', and the government's perspectives, but they also involve other stakeholders including consumers, investors, and international organizations supporting a green-growth agenda in Bangladesh.

Bangladesh's government and the country's financial institutions both provide and manage financial resources, creating an enabling environment within the country to motivate green action. The BB began offering green finance through a revolving refinance scheme for green products and initiatives at a low cost in 2009. Since then, the BB also has adopted regulations and guidelines, such as the 2011 Policy Guidelines for Green Banking and the 2020 Sustainable Finance Policy, to operationalize green banking in the country. Currently, the BB's minimum target for green finance is set at 5 percent of the total funded term-loan disbursement/investment for all banks and financial institutions in the country. The government has put in place incentives to

promote green investment and has also started to implement plans, programs, and other initiatives intended to promote green growth.

Equity investors, institutional investors, and international organizations play essential roles in funneling green finance to public and private green activities. The World Bank has estimated that, just to meet the SDGs, domestic governments need to provide between 50 and 80 percent of the funding and that the remaining amounts should come from third parties (Weber 2018). These stakeholders influence the activities and investment strategies of the government and the private sector.

Borrowers use the finance for green projects, products, services, technologies, and the adoption of environmentally sustainable practices. This is partly due to the growing demand from buyers switching to more advanced suppliers who can deliver on sustainability (Berg et al. 2021). In Bangladesh, the private sector predominantly consists of CMSMEs, which account for almost 90 percent of all businesses and employ more than 50 percent of the labor force. The growth of CMEMEs has been coupled with unsustainable natural resource use and the degradation of the environment through air, soil, and water pollution. While the impact of individual CMSMEs on the environment is low, their aggregated impact is

significant. Therefore, they are considered key to advancing green growth in the country.

Consumers in Bangladesh are becoming more concerned about the environment, even though their environmental consciousness is not reflected in actual purchase behavior (Adrita 2020). Their undeveloped green-purchase intentions result from people preferring to seek low-cost products and services that offer similar benefits as those produced through more environmentally-sustainable processes (Chowdhury and Alamgir 2021). There are, nonetheless, opportunities to build on consumers' environmental awareness and foster consumption of environmentally-sustainable products and grow markets for green goods and services dynamically (Nielsen 2015).

Compared to high-income countries, green-growth initiatives in low- and middle-income countries are driven by donors' interest in providing (a) analytical and technical assistance such as guidelines, roadmaps, and action plans; and (b) the financing and implementation of green projects. In these cases, governments play a critical role in mobilizing international resources and aligning them with domestic needs based on national goals and strategies. The capacity with which the government implements this role is assessed in detail below.

Barriers to Channeling Green Finance into Bangladesh's Green-Growth Projects

Bangladesh has taken substantial steps to spur a green economy by, among other steps, adopting green policies, programs, and projects; establishing green regulations; and extending green incentives. Several institutional bottlenecks, however, remain that impede the implementation of Bangladesh's objective of growing in an environmentally sustainable way. Within this context, FIs continue to perceive green investments as riskier than non-green ones, while borrowers face huge hurdles in adopting and financing green practices. At the same time, polluters do not feel the need to change their practices. This has resulted in insufficient financial flows, an inadequate pipeline of projects, and, subsequently, ineffective green growth outcomes.

Listed below are key bottlenecks and barriers that have been identified by examining the challenges faced by stakeholders mapped in the GFVC in the processes for financing green growth in Bangladesh. Conversations with key stakeholders as well as a review of previous studies carried out on green financing were considered in this report when identifying the root

causes of impediments to financing Bangladesh's green growth.

Borrowers face significant hurdles in adopting and financing green practices, such as those listed below.

- A lack of capability to adopt and implement green practices and technologies. Adopting and implementing green practices and technologies requires borrowers to employ new skilled resources, often new personnel or through additional training, and new management systems. Without adequate understanding of those practices and technologies and without adequate experience in successfully operating them, entrepreneurs' capacity to go green is affected (Cirera and Maloney 2017). Improving business capabilities to go green requires not only monetary resources but also the sharing of knowledge related to best managerial and production practices appropriate to the challenges and opportunities that businesses face. In Bangladesh, the Sustainable Enterprise Project provides an example of the use of green finance and the development of capabilities in microenterprises to adopt environmentally sustainable practices and technologies (**Box 6.1**).

Box 6.1

Financing Environmentally Sustainable Practices in Bangladesh

The World Bank's Sustainable Enterprise Project (SEP) provides access to microenterprise (ME) loans through the PKSF and its partner NGOs to adopt cleaner and greener methods of operation. Since 2018, the SEP has directly supported 60,000 MEs across Bangladesh that have received loans and training for the adoption of environmentally sustainable practices (ESPs). Close to 33,000 MEs have adopted at least one ESP, including practices that advance the 3Rs and waste management; the reduction of water and air pollution; and the use of energy saving technologies. In addition, the SEP helps MEs to adopt practices that reduce occupational-health and safety risks and improve workers' livelihoods. These include the use of personal protective equipment (PPE); access to safe drinking/potable water, hygienic toilets, and safe hand-washing facilities; improvement of air-circulation systems with ventilation at the workplace; and access to sufficient lighting. By providing basic services and improving the health of workers, both workers and MEs can increase their productivity and ability to take up economic activities. The SEP has also encouraged non-banking financial institutions to support green-growth initiatives and shift their portfolio assets to include environmental protection, pollution and contamination reduction, and better workplace safety—considerations that are too often overlooked among Bangladesh's MEs.

Source: World Bank, <https://projects.worldbank.org/en/projects-operations/project-detail/P163250?lang=en>

- **Limited knowledge and capacity to prepare bankable green projects.** A BB study showed that 62 percent of SMEs do not maintain balance sheets and many of those that do, lack audited ones (BB 2013). In addition, SMEs are usually unable to provide loan collateral and cannot always prove there is enough demand for the green products and services they provide. Those factors increase investors' concerns about the financial viability of investments in polluting sectors such as agriculture and small manufacturers (Rahman et al. 2019; UKaid 2017a).

Entrepreneurs with insufficient knowledge of environmental safeguards and due-diligence issues tend to submit projects to banks that do not adequately comply with bank requirements. This reduces their opportunity to access green finance. In addition, access to finance is especially hard for CMSMEs, since a sizable number operate their businesses outside cities and have to travel to the banks located in the cities to access financing (PRI 2021).

- **Stringent requirements to borrow.** Borrowing is hard due to stringent due diligence on loanees' creditability, business track record, environmental and social safeguard issues, strict guidelines on collateral, short repayment periods, and unattractive refinancing schemes offered by banks and FIs. The BB, for example, introduced a refinancing fund for the

transformation of the brick sector (BB 2016), but it suffered from low disbursement due to commercial banks' refusal to accept the land where the kilns operated as collateral (BB 2016).¹⁹ One reason for this is traditional brick kilns are run on lands that are fallow, barren, unproductive, unsuitable for agriculture, and their market price is very low (ADB 2022). Most CMSMEs in Bangladesh are, however, run by low-income households with no other assets to offer as collateral, reducing the feasibility and relevance of the scheme.

- **The high capital investment requirements for going green**, either for acquiring a new technology or to retrofit existing equipment in certain polluting industries. Transitioning to a cleaner production path entails additional investment, including importing machinery, accessories, and other goods, usually with long returns on investment, making green ventures expensive. In addition, administrative hurdles, fees, and issuance costs, among other transaction costs, reduce investors' incentive to fund green projects and stop entrepreneurs from asking for funding (Vivid Economics and Climate Bonds Initiative 2019; UKaid 2017a). The cost of non-fired block bricks, for example, is almost double that of traditional bricks. The more sustainable brick kilns – tunnel and hybrid Hoffman kilns (HHKs) – require high initial investment to procure

land and import machines. The production systems for these two kiln types require comparatively more land for their setup on highlands which is very expensive.

Despite financing mechanisms, like the BB refiancing scheme, any green transformation in brick production will involve high initial investment costs and long-term break-even points. Polluting industries, on the other hand, can operate their business without these additional costs in a regulatory regime where enforcement is lax. Consequently, there is no financial penalty for goods and services with significant negative impacts on the environment and key ecological services. Zigzag kilns' associated brick-production costs remain low, giving such kilns an advantage that allows them to dominate the market. This, in turn, signals to domestic banks that demand will be low for green bricks, since those produced by using lower-cost zigzag technology will continue to dominate in the housing and construction sector. Consequently, enterprises will be reluctant to invest in new technology. In the present scenario, green finance gives preference to industries with strong forward links.²⁰

- **Low demand for green products** with consumers opting for cheaper goods.

²⁰ Mr. Asadur Rahman Khan, General Secretary, Bangladesh Brick Manufacturing and Owners Association, Shantinagar, Dhaka (pers.comm.)

Polluting sectors in Bangladesh, such as agriculture and manufacturing, can operate at lower cost, providing more-competitive goods and services for the domestic economy. Green products and services may be comparably more expensive due to up-front costs. Consumers tend to be unaware when goods are produced by polluting industries that negatively impact the environment. Most sectors identified in Bangladesh as eligible for receiving green finance have low investment demand, a situation driven in part by consumers' lack of interest in green products and solutions, and entrepreneurs' weak awareness of the opportunities of going green (UKaid 2017a).

Financial institutions continue to perceive green projects, businesses, and technologies as risky. They face the following challenges.

- **Structural weaknesses in the financial sector** limit the capacity of finance to reach under-served segments, such as CMSMEs, economic sectors perceived as risky, and long-term projects. As highlighted in the 2020 Financial Sector Assessment Program, these structural weaknesses include the interest-rate cap, licensing framework, corporate and regulatory governance structures, credit-underwriting capacity, operational inefficiencies, and underdeveloped capital markets (World Bank 2020). Addressing these issues is a prerequisite for growth and for channeling finance into climate responses.

¹⁹ General Secretary, BBMOA, Shantinagar, VIP Tower, Dhaka (pers.comm.)

- **An appetite for low risk and a short-term focus** contribute to slow green-loan disbursement. The BB had set a 5 percent loan disbursement target, which financial institutions have been unable to meet. In Bangladesh, 8.1 percent of total loans in September 2021 were nonperforming – on a par with India but much higher than Nepal and Sri Lanka (CEIC 2023). In a systemic loan-default culture, such as in Bangladesh, banks tend to refrain from investing in unproved practices, technologies, and business models with unknown risks. At the same time, most green projects have long payback periods. Loans traditionally focus on short-term monetary gains and do not take account of long-term environmental impacts due to vague policies and lax enforcement (UKaid 2017a). Although green projects address negative environmental externalities, lenders see little commercial value in it.
- **High cost of doing business** attributable to on-site visits to projects in a green portfolio and the need for specialized human resources to inspect and verify project activities. Post monitoring of projects funded by banks under green finance requires continued oversight, which is an added burden on the traditional banking culture in place in Bangladesh.
- **Inadequate in-house technical capacity.** The processing and administering of loans for green projects suffers from a lack of technical capacity to assess environmental

and social goals, risks, and the future potential of green technologies. The BB introduced guidelines on environmental and social-risks management in 2017. Nonetheless, Bangladesh’s credit and financial institutions still need to improve their capabilities for evaluating the environmental and social risks associated with green projects and the financial implications of those risks (Hossein 2018). Issuers and investors have capability gaps when assessing project selection, monitoring, and evaluating green-financed projects. Additionally, in the absence of an institutionalized third-party monitoring and verification system in Bangladesh, banks find it hard to keep track of whether borrowers have adequately addressed environmental issues. Consequently, banks are reluctant to finance green projects without substantial collateral to reduce the perceived risk. Banks and financial institutions, for example, currently rely on Environmental Impact Assessments (EIAs) and environmental clearance certificates issued by the DoE for projects submitted by entrepreneurs trying to access green finance. Financial institutions also rely on the DoE to perform suitability assessments for green technologies.

For the construction of a new vertical-shaft brick kiln (VSBK), HHK, or tunnel kiln, for example, the entrepreneur needs to obtain certification from the DoE that the kiln has been designed in accordance with standards, specifications, and construction methods

published by the DoE or certification that the kiln has been designed in accordance with standards, specifications, and construction methods that reflect best international practice. The revised EIA guidelines issued by the DoE require a robust assessment of projects that are likely to have profound implications for the environment. A lack of human resources and insufficient environmental monitoring information have, however, prevented the DoE from the timely granting and renewing of environmental clearance certificates to factories and development projects.

In 2018, the Country Environmental Assessment recommended reforms to the DoE with an eye to developing adequate budget allocations to “modernize its information management, monitoring, and enforcement systems; build up and organize its staff to more effectively respond to pressing environmental challenges; and effectively decentralize to district and divisional levels, with priority given to areas/cities with the highest levels of pollution” (World Bank 2018). In this context, the BB’s refinance scheme for the brick sector faces slow disbursement. Bangladesh may benefit from the growth of intermediaries in assessing environmental and social safeguarding issues professionally.

Financial institutions could also learn from successful cases already present in Bangladesh in the garment industry (**Box 6.2**).

Box 6.2

Resource Efficiency in the Garment Industry in Bangladesh

Companies can play a major role through CSR and supply-chain initiatives. Since 2014, leading international brands in the textile and apparel industry have been closely involved with the successful Partnership for Cleaner Textile (PaCT) program financed by IFC. The PaCT works with global apparel brands, and the Bangladesh Garment Manufacturers and Exporters Association (BGMEA) to support the entire textile value chain – spinning, weaving, wet processing and garment manufacturing – in adopting cleaner production practices and engages with brands, technology suppliers, industrial associations, financial institutions, and government to bring about systemic and positive environmental changes. Since its inception, PaCT has worked with more than 338 factories to reduce freshwater consumption by 25 million cubic meters (m³) per year and cut wastewater discharges by 21.08 million m³ per year. These factories now save 2.5 million megawatt hours (Mwh) of energy per year and avoid greenhouse gas emissions of up to 489,796 tonnes of CO₂ a year. To facilitate investment in resource

efficiency technologies, PaCT has developed financial mechanisms and products to enable access to finance for textile factories and their value chains. It has also engaged in matchmaking between banks, businesses, and technology suppliers to build capacity for identifying and assessing bankable projects. The PaCT advocacy also helped to create the BB's Green Transformation Fund, a US\$ 200 million refinancing scheme that facilitates access to finance for importing capital machinery and accessories for environment-friendly initiatives.²¹

Source: PaCT, <https://www.textilepact.net/what-is-pact.html>

²¹ Water-use efficiency in wet processing, water conservation and management, waste management, resource efficiency and recycling, renewable energy, energy efficiency, heat and temperature management, air ventilation and circulation efficiency, and work environment improvement initiatives.

The Government of Bangladesh lacks institutional structures for implementing its policies and targets and for effectively holding polluters responsible. Specifically, it faces the following.

- **Low interagency coordination to advance a green growth**, backed by a national action plan and green-finance policy, to support Bangladesh's green-growth commitments. With several agencies and ministries playing different roles that shape investors' decisions to invest in the country, Bangladesh lacks a dedicated body with the specific objective of improving and securing access to local and international green finance (UKaid 2017a). The BB initiatives have succeeded in creating a framework for the banking sector, but the enabling environment for ushering in a new development paradigm is still missing. A national green-finance policy that defines the use of finance beyond what has been done by the BB, for example, would spur the momentum for a green transformation of entire industries and thereby help the country achieve its strategic goals. This would, however, require coordination among different ministries and collaboration between government agencies to champion and implement that approach.
- **Lax enforcement mechanisms to punish environmental offenders** have profound implications for entrepreneurs willing to

go green. The Bangladesh Environmental Sustainability and Transformation Project suggests that deficiencies in existing regulations, and weak environmental monitoring and enforcement have provided few incentives for polluting industries to make green investments and improve their environmental performance through new green products and services (World Bank 2021a). Without the impetus to acknowledge and internalize the social costs of their actions, industries in Bangladesh can operate their businesses without consequences for pollution. As acknowledged by the 2021 report *Unlocking Nature-Smart Development: An Approach Paper on Biodiversity and Ecosystem Services*, in a regulatory regime where the polluter-pays principle is not enforced, and a short-term bias and political constraints limit governmental action, even businesses willing to adopt green practices will avoid doing so because of the high costs and stiff competition from polluting competitors who do not face consequences (World Bank 2021b; UKaid 2018; TIB 2017). Similar conclusions were drawn in the World Bank's 2006 CEA (World Bank 2006) when discussing the DoE's ineffective inspection and enforcement mechanism, and polluters' willingness to bypass wastewater treatment for higher profits.

It has been claimed that it is less expensive for factories to pay penalties if they are imposed, than to invest in preventing pollution. Since

industry does not pay anything to extract and use water, there is no incentive to reduce water consumption and become more efficient. It is hoped, however, that the revised EIA guidelines issued by the DoE would require a robust assessment of impacts on the environment, as recommended in the 2014 report *Bangladesh Responsible Sourcing Initiative: A New Model for Green Growth* (World Bank 2014). The EIA guidelines may spur the growth of a private-sector third-party entity or group of entities that would assess proposals' environmental- and social-safeguarding issues professionally. Without a proper business environment and regulatory framework for attracting investors, the potential for advancing green finance in Bangladesh remains limited (Hossain 2018).

- **There is inadequate expertise to evaluate green technologies and investments** within government as well as in FIs assessing the viability of green investment. Further, Bangladesh at present lacks a dedicated institution to assess and evaluate green technologies that borrowers may want to adopt for managing their enterprises' pollution (UKaid 2017b).
- **There is a lack of a project pipeline to attract investment in such green sectors as transport and urban planning.** Currently, Bangladesh lacks a government institution to collate projects to share with donor agencies that might be potential investors in green

projects. To promote green growth, investors need better information on viable, commercial projects that promote green growth (Vivid Economics and Climate Bonds Initiative 2019). The government could help to develop such a pipeline by providing assistance to entrepreneurs when creating development plans, project ideas, and investment plans, as well as financial disclosure, since these steps are difficult and costly for businesses (IFC 2016). The Country Investment Plan for Environment, Forest and Climate Change (CIP-EFCC), for example, formulated under the leadership of the MoEFCC, provided a comprehensive list of programmatic areas for investment. The CIP-EFCC was not, however, sufficient to attract investment since a pipeline of projects was not readily available.

Understanding the Enabling Environment

To pinpoint the main areas for intervention, the barriers identified through the GFVC are superimposed on the enabling environment discussed earlier (Figure 6.3). Figure 6.4 highlights the key barriers faced by the main stakeholder groups in financing green growth in Bangladesh. Eliminating or substantially reducing these barriers could help align the supply of finance with those sectors that need to go green, for example, greener low-carbon infrastructure, transport, manufacturing and agriculture. Addressing these barriers will require a well-coordinated response from key ministries and government agencies—a response that enforces regulations, establishes incentive structures, and fosters strong environmental and technical expertise within both the government and the private sector. Such action will stimulate the adoption of green practices and technologies, and grow green businesses—essentially creating a pipeline of projects requiring green finance. Importantly, it would concurrently make financial institutions better able to identify the future potential of green investment.

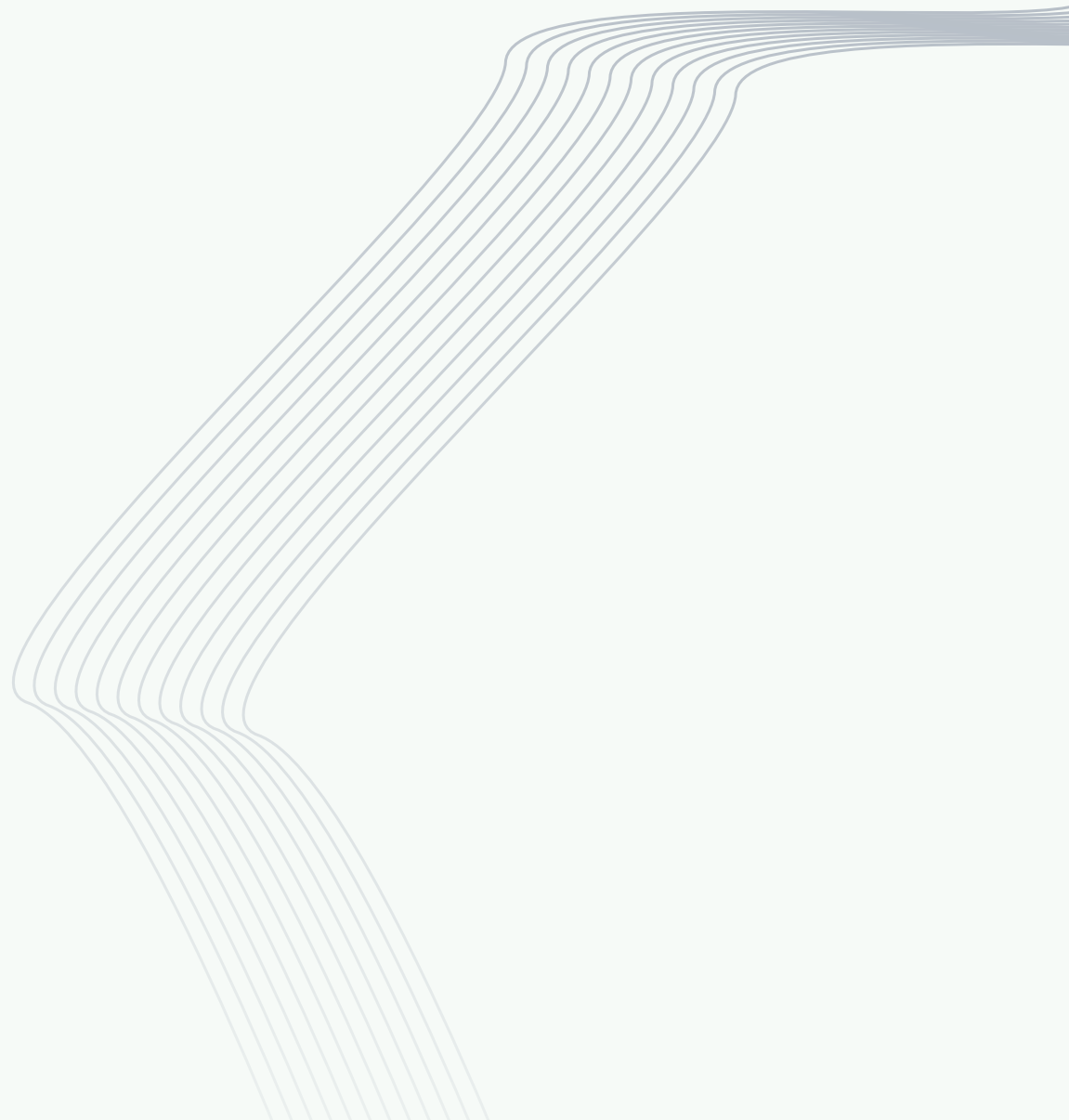
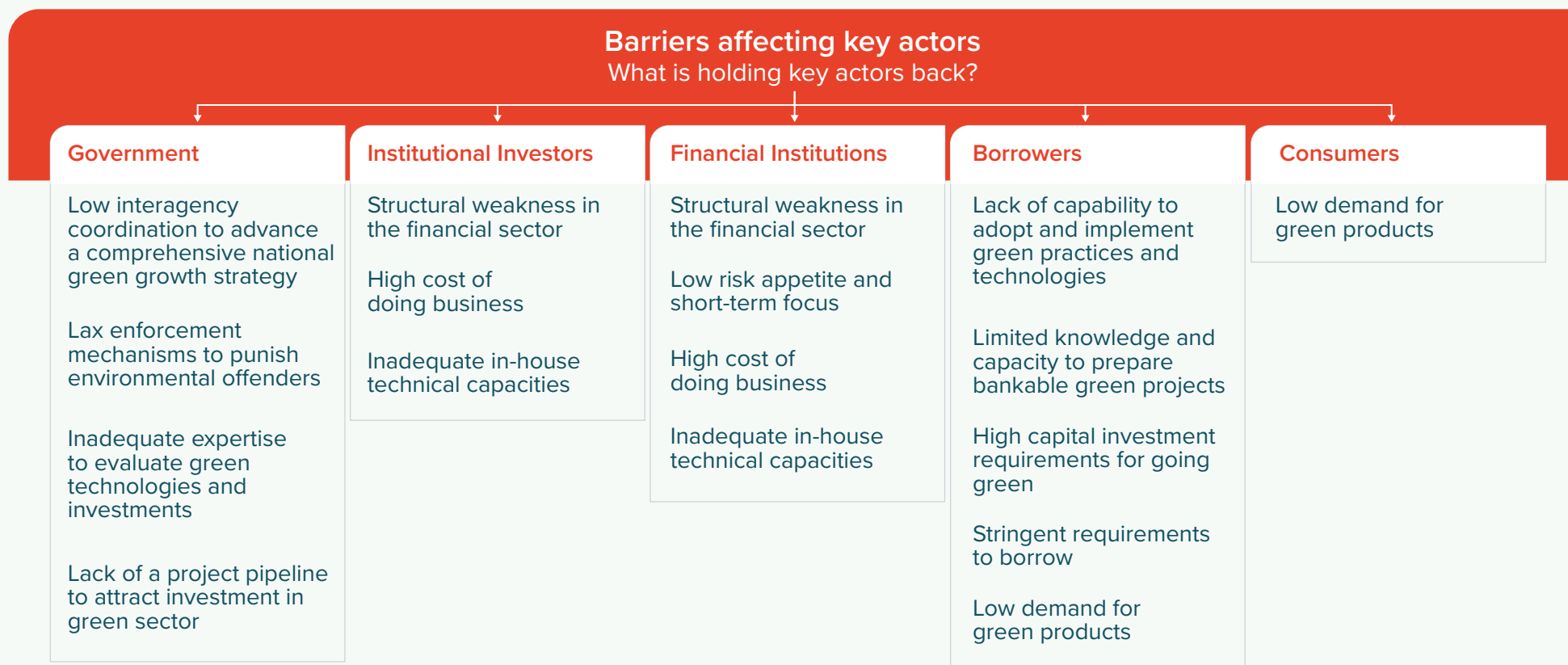


Figure 6.4 Barriers Affecting Key GFVC Actors when Financing Green Growth in Bangladesh: this figure depicts the current situation that shows a gap between the demand and supply of green financing based on consultations and interviews in Bangladesh undertaken 2021 -22. As of today, the regulatory framework that enables the role so verification, data services and green investment capacity work is limited.

Closing the gap between those needing finance and those providing it is central to promoting green growth in Bangladesh. Areas of action are below (a) to lower the barriers in financing green growth and (b) to create an enabling environment to effectively fund green growth in Bangladesh.



6.3

Recommendations



Through a systems-based analysis of barriers in the GVTC, this report identifies three categories of opportunities to facilitate the financing of green growth in Bangladesh:

- a. create a governance framework for green growth;
- b. use a mix of incentives to boost environmental markets;
- c. strengthen institutional and borrower capabilities.

Implementing these steps will accelerate the flow of resources from the suppliers of green finance to the sectors most in need of such resources. **Table 6.1** summarizes those recommendations.



Table 6.1 Summarized recommendations

Create governance framework for green growth Medium term	Actions Adopt a national green-growth action plan backed by a commensurate set of regulatory and institutional frameworks	Who could implement? BB, MoF, MoEFCC, MoI, BSEC, and Bangladesh Investment Development Authority (BIDA)
	Constitute a high-level national oversight body to coordinate and monitor the progress of green growth efforts	MoF and MoEFCC
	Create an arrangement of ministries and government agencies that collect and analyze point-source data to enforce policies that create a pipeline of verified investment-ready projects	BB, MoEFCC, DoE, and Aspire to Innovate (a2i)
Use a mix of incentives to boost environmental markets Short - and medium - term	Actions Encourage the adoption of green practices and promote green businesses and investments with positive environmental externalities	Who could implement? BB, MoEFCC, MoF, MoI, National Bureau of Revenue (NBR), SME Foundation, PKSF, BSEC, and Central Procurement Technical Unit (CPTU)
	Adopt incentives that address the actual and perceived risks faced by financial institutions	BB, MoEFCC, MoF, and BSEC
	Reduce the risks perceived by financiers and boost private-sector adoption of green practices and technologies, and thereby boost the offering of green products and services	BB, MoEFCC, MoF, NBR, CPTU, DoE, PKSF, and BSEC
	Foster a collaborative institutional system to implement green financial incentives	BB, MoLGRC, MoEFFC, MoF, DoE, CPTU, a2i, and BSEC
Strengthen institutional and borrower capabilities Short, medium and long term	Actions Build skills and expertise in green financing across sectors, from scientific and experts in government agencies to financial institutions, and from private businesses to students	Who could implement? BB, financial institutions, SME Foundation, PKSF, Bangladesh Civil Service Administration Academy (BCSAA), National Academy for Planning and Development (NAPD), National Institute of Local Government (NILG), and vocational and higher education institutions
	Develop a training pipeline to adopt across government, businesses, and financial institutions	BB, financial institutions, SME Foundation, BCSAA, NAPD, NILG, and vocational and higher education institutions

Recommendation 1

Create a Governance Framework for Green Growth

Adopt a broad-based national green-growth action plan backed by the right mix of regulatory and institutional frameworks.

Bangladesh, in its 8th FYP (Government of Bangladesh 2020), has committed to examine various strategies for green growth, including those from low- and middle-income countries such as Chile and Rwanda, which adopted their strategies in 2013 and 2011, respectively.

For Bangladesh to carry forward its national goal for promoting green growth, the necessary first step is a national green-growth action plan that includes clear goals and subgoals, and the right mix of regulatory and institutional frameworks that lay out roles and responsibilities for ministries and government agencies (UNEP 2017). This right mix would include a complementary action plan for green finance to articulate the path forward in mobilizing public and private capital for green investment. These steps would also help in meeting obligations to safeguard the environment, biodiversity, and natural ecosystems as enshrined in Bangladesh's constitution. Providing clear guidance for transitioning to a low-carbon economy and creating a conducive regulatory and institutional environment are key to reducing asymmetries of information and diminishing risks,

thus creating opportunities for investors to direct green finance towards sustainable projects.

Constitute a high-level national oversight body to coordinate and monitor the progress of green-growth efforts.

A high-level national committee, under the head of the government, could provide essential oversight on the implementation of green growth action – the Republic of Korea provides an example of this approach. Bangladesh's MoLGRDC, with support of the MoEFCC, should take the lead in engaging local government bodies. Such collaboration would provide strong oversight on local-level development planning and implementation of green projects to ensure that economic activities do not conflict with environmental, biodiversity, and natural ecosystem concerns. The national oversight body could also help address coordination failures and other inefficiencies that make it difficult to advance coherent green finance that connects all the existing elements which could help advance environmentally sustainable development. This includes addressing some of the structural weaknesses currently present in the financial sector, such as the interest-rate cap, the licensing framework, and corporate and regulatory governance structures. Finally, the coordinating body could contribute to advance monitoring and enforcement, and create incentives for polluting industries to make green investments, improve their environmental performance, and for investors to commit resources to green projects and initiatives.

Figure 6.5 below provides an overview of a potential green-growth framework for Bangladesh.

Figure 6.5 Overview of Potential Green-Growth Framework in Bangladesh



Source: World Bank

Strengthen the institutional framework to collect and analyze point-source data to (i) inform policy design and enforcement, and (ii) create a pipeline of verified investment-ready projects. This, in turn, will stimulate competitiveness between firms and, with adequate enforcement or public disclosure, could hold polluters responsible. An adequate monitoring system, one that collects information at the source of pollution and then assembles it centrally for verification, analysis, and disclosure, would create a credible enforcement mechanism. Systems for point-source data collection allow for the real-time monitoring of pollution. This reveals environmental externalities, thus motivating businesses to manage their environmental impact. The data from this system can be utilized to penalize polluters. This serves to strengthen the enforcement of the existing regulatory and monitoring framework while also internalizing the social costs of polluters' actions. Penalties or pollution taxes are powerful in reducing undesirable activities. This would also help level the playing field between compliant and noncompliant businesses, creating a competitive market for those adopting green practices and technologies, and designing sustainable products. In different countries, such as the Republic of Korea, automated emissions-monitoring systems are in place to monitor emissions, charge polluters, and inform policy (Box 6.3).

Box 6.3

The Republic of Korea's Automated Emissions Monitoring System

The Korea Environment Corporation (K-eco), a quasi-governmental organization, manages a comprehensive data measurement and analysis system. For example, the CleanSYS monitoring system measures air pollutants emitted from stacks in real time using an automatic stack measuring device that connects online to K-eco control centers. While K-eco manages this monitoring network and analyzes the data, the information is then used by local government and the Ministry of Environment to charge polluters fees and penalties, and to inform policy formulation. The data are also shared with the Korea Environmental Industry and Technology Institute (KEITI), the Korea Institute for Advancement of Technology (KIAT), and other public agencies for purposes of financial decision making. The point-source pollution monitoring system was initially manual but a telemonitoring system was introduced to reduce the administrative burden, enable an early warning and real-time data disclosure.

Source: K-eco <https://www.keco.or.kr/en/lay1/S295T324C343/contents.do>

Promoting green technologies that measure and monitor pollution can mitigate risk due to a lack of verifiable information investors and FIs face when lending. A system for real-time tracking of data that can then be shared publicly could be especially useful in lowering such investor risks. Eco-certifications based on the data could also provide a sense of confidence in the practice, technology, or product. Finally, third-party auditors would only strengthen the assurance provided.

Implementing the recommendation to promote green technologies that measure and monitor pollution would require the DoE to take the lead with participation by other agencies. Bangladesh's DoE is mandated through the Environmental Conservation Act 2005 and reinforced by the National Environmental Policy adopted in 2018 to monitor pollution. Implementing the recommendation requires resources to install technologies for point-source data collection. Since multiple agencies would utilize this system, the setup cost could, however, be shared. Other public agencies familiar with technology-based solutions could partner in setting up and operating this system; one such agency is the government's a2i, a catalyst for digital transformation.

While upfront costs are required to implement the above recommendation, over time this will become a budget-neutral activity in which penalty payments cover operating-system costs.

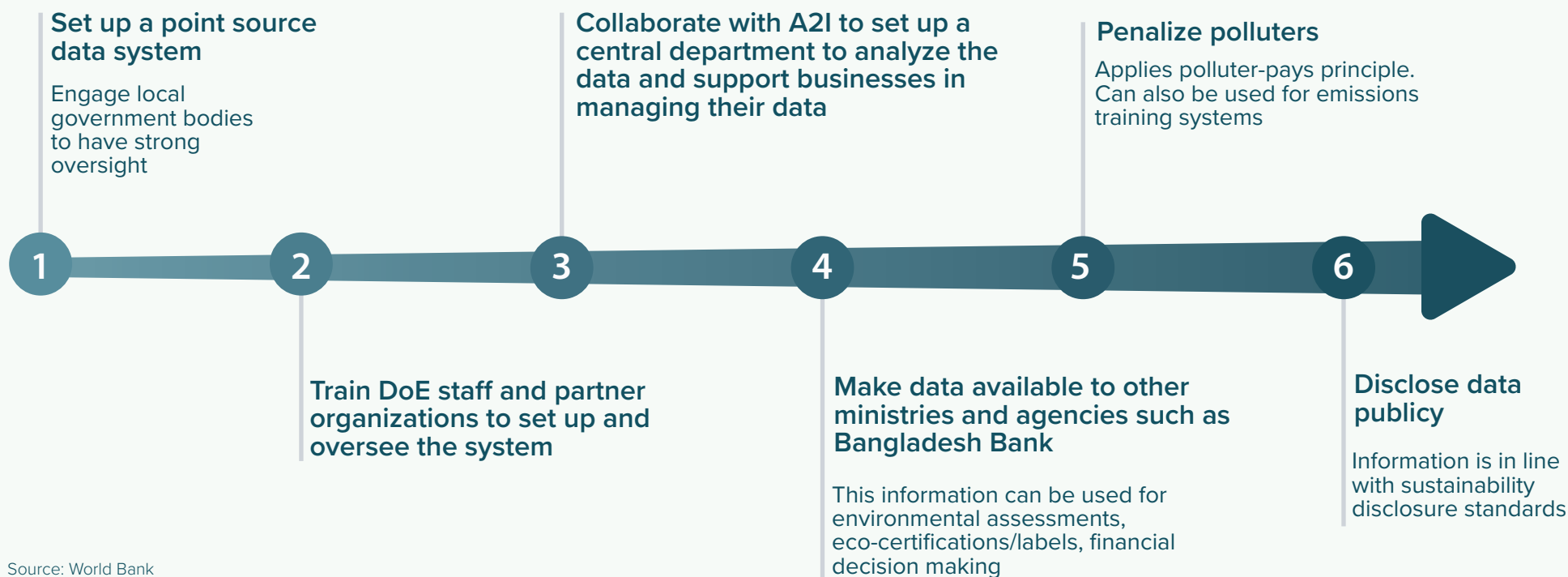
Analyzed data can also be used to reward those who meet or surpass pollution-reduction goals.

Subsequently, these data can also be used by other public entities, such as the BB, to assess borrowers' environmental standing, reducing the analytical burden on the DoE. Such data can reduce the hurdle that financial institutions face in achieving the 5 percent target for green investment. As seen in the Republic of Korea, such incentive systems work best with comprehensive

cooperation among relevant ministries and state-owned companies. In addition, the collection and analysis of point-source data can reduce information asymmetries by making it easier for investors to track the performance of green projects and initiatives, thus enabling the creation of a pipeline of verified investment-ready projects.

Figure 6.6 shows the steps for implementing the above recommendation.


Figure 6.6 Steps for Strengthening Government Agencies to Collect and Analyze Point-Source Data to Facilitate a Pipeline of Verified Investment-Ready Projects

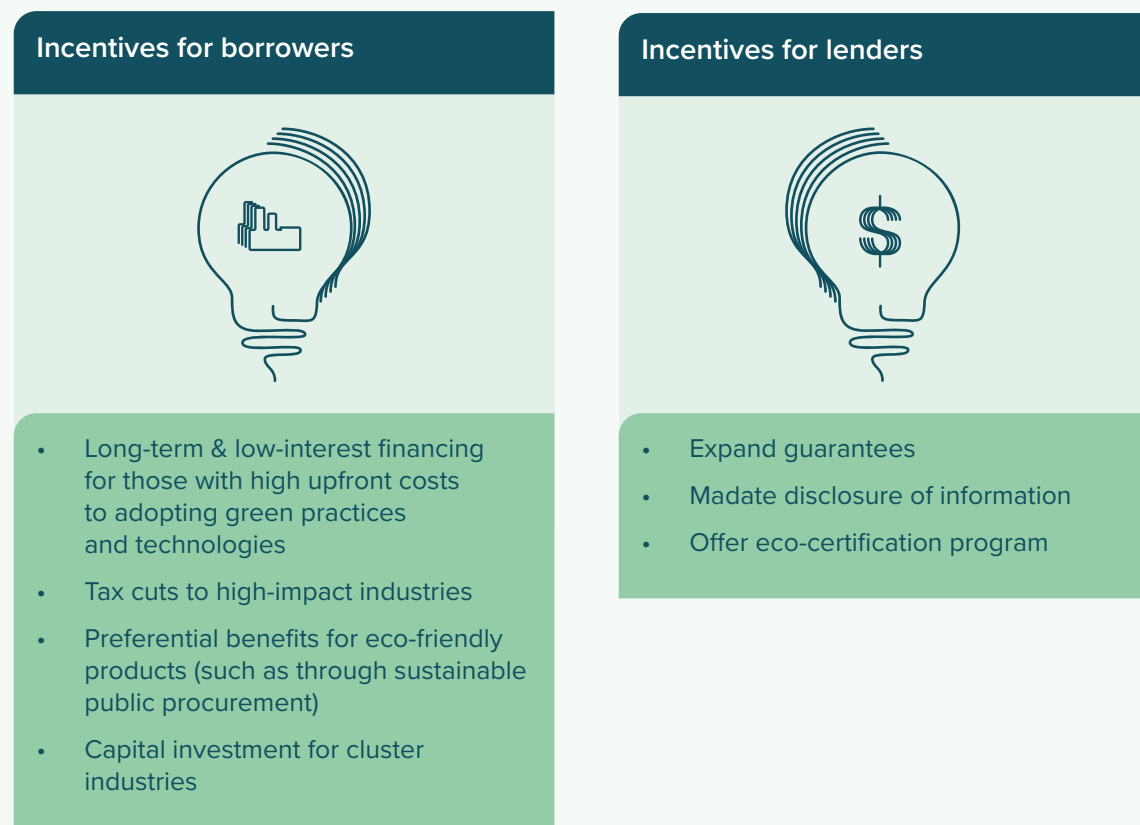


Recommendation 2

Use a Mix of Incentives to Boost Environmental Markets

Encourage the adoption of green practices and promote green businesses that generate positive environmental externalities (Figure 6.7) Incentives such as tax cuts and exemptions for pollution-control efforts; long-term low-interest financing for the adoption of efficient/green technologies; subsidies; and preferential benefits for eco-friendly products make it easier for businesses to adopt green practices. Clusters of industries can also be supported to provide environmental infrastructure. This includes central effluent-treatment plants, solid-waste and liquid-waste recycling, air-emissions facilities, and promoting the use of energy from renewable sources, thus facilitating businesses, and reducing upfront costs.

 **Figure 6.7** Incentives for Borrowers, Financial Institutions and Investors



Source: World Bank

Flexible financial products developed to invest in these industrial cluster will further incentivize businesses to adopt green practices and technologies. In turn, by making green practices cheaper to adopt, businesses would be able to provide their products at competitive prices, potentially boosting demand from consumers. There is interest in expanding this concept to cluster financing through which, for example, a group of businesses adopting shared practices or technology, such as a central effluent treatment plant (ETP) or waste-collection system, can be given a green loan to share the burden of repayment, as the Government of Malaysia has done with its Waste Eco-Parks initiative (Box 6.4).²²

Box 6.4

Incentives for Clustering Waste Management in Malaysia

The Government of Malaysian provides an example of clustering—providing incentives to waste eco-parks (WEPs) to promote waste management in a more integrated manner. These aim to promote zero waste by relocating recycling companies, previously scattered across multiple industries, to a central location within a WEP. This incentive is offered to companies in the WEP program, along with companies developing infrastructure for them, companies managing WEPs, and industry stakeholders involved in waste recycling, recovery, and disposal. From 2016 to 2025, WEP developers (companies) receive an income tax exemption of 70 percent on statutory income derived from rental of buildings; rent received from the use of waste collection and separation facilities; and rent received from wastewater treatment facilities located in WEPs. Over the same period, WEP managers (companies) receive income tax exemptions of 70 percent on statutory income derived from

activities including management, maintenance, supervision, and marketing of the WEP. Furthermore, WEP operators (companies) benefit from income tax exemptions of 100 percent for a period of 5 years on statutory income derived from the qualifying activities undertaken in the WEP or income tax exemptions equivalent to 100 percent of qualifying capital expenditure (investment tax allowance) incurred within a period of 5 years. The allowance can be offset against 70 percent of statutory income for each assessment year. Other integrated waste-management companies that perform/invest in additional activities, such as composting, storage, collection, or disposal in addition to recycling, recovery, or disposal of waste, can be considered for the green-investment tax allowance (GITA).

Source: Malaysian Investment Development Authority <https://www.mida.gov.my/publications/malaysias-green-technology/>

²² Consultation hosted by the Policy Research Institute, March 2022.

This includes the integration of CMSMEs. The BB has introduced several support schemes for CMSMEs in recent years, with a special focus on female entrepreneurs. Utilizing the grants received from different development partners and funds derived from the BB's own sources, financing mechanisms, such as credit wholesaling, credit guarantees, and refinancing through a concessionary fund supply, are already in place to support emerging CMSMEs. This is the appropriate stage to start ensuring that these facilitative financing schemes also contribute to the greening of CMSMEs. The BB has identified several priority sectors for extending CMSMEs financing support. The list includes such sectors as renewable energy production, light engineering, plastics industry, jute-made products, the leather industry, agri-products, and food processing that have a direct link with the economy's green transformation. At this early stage of CMSMEs growth, it is important to ensure that the expansion of these sectors does not become compromised by associated environmental risks. The very first step can be aligning both ongoing and upcoming CMSMEs support schemes with existing green-finance policies. That alignment will help CMSMEs grow in a sustainable way, complying with environmental risk-management requirements. In future, strategies to integrate semiformal and informal CMSMEs accessing green financing mechanisms can be explored as well.

Simultaneously, adopt incentives that address the actual and perceived risk for financial institutions, such as guarantees and publicly developed eco-certifications. Such incentives minimize the cost to FIs, which in turn would allow businesses to have easier and cheaper access to finance. Mandates for public disclosure for information about enterprises' green management can provide essential information for evaluating their viability as borrowers. These disclosures would be in addition to the point-source data identified in Recommendation 1. Better access to information, especially if it is verified and audited, alleviates perceived risks for investors and financial institutions. In the Republic of Korea, for example, a green certification scheme is used to reduce risks and asymmetries of information faced by financial institutions that provide green loans to the private sector (**Box 6.5**).

Box 6.5**Green Certification System in the Republic of Korea**

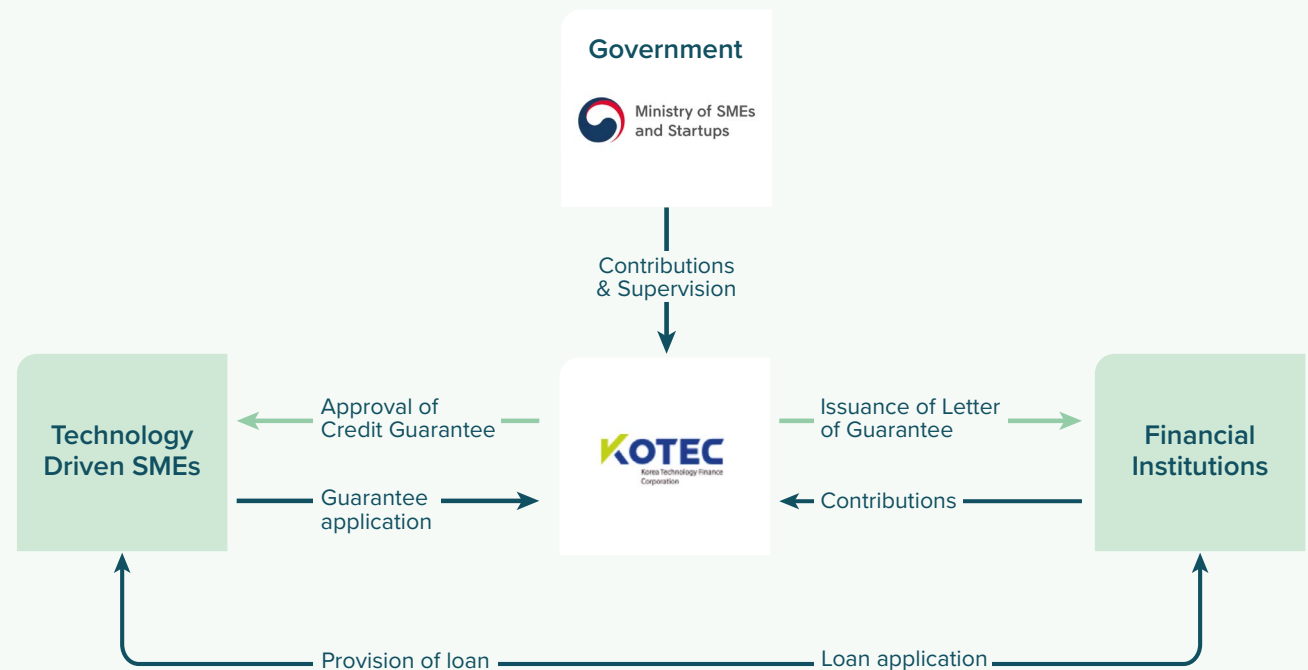
The KIAT, under the Ministry of Trade, Industry and Energy (MoTIE), plays a core administrative role as the green-certification office. The certification covers technology and associated products that minimize greenhouse gas emissions and other pollutants, and specialized enterprises whose economic activities are related to green-growth priorities. Governmental agencies from multiple sectors cooperate based on their green expertise in assessing applications through document reviews and field evaluation. Furthermore, these agencies provide operational guidance and associated incentives, such as financial support and green public procurement for certified companies. The KEITI, under the Ministry of Environment, is one of the agencies that collects and analyzes environmental information to assess companies' environmental pollution risk, for example, their violation records of pollution regulations; environmental management activities, such as green certificates, eco-labels, International Organization for Standardization (ISO) certificates; and levels of environmental management. The evaluation results are shared with financial institutions, including banks, and asset-management and insurance companies for due diligence. The final evaluation results are provided to financial institutions that have signed an agreement to spread green finance.

Source: KIAT <https://www.greencertif.or.kr/ptl/cDefinitionC/operating.do>; KEITI <https://www.envinance.kr:442/info/info.do>

Going beyond the banking sector, green financing can be promoted through leveraging private-sector funds in the capital and bond market. Listed companies, for example, could be required to disclose information about the social and environmental impact of their activities in standardized formats in their annual financial reports. Regulations can be formulated to incentivize better-performing companies in this regard through giving better ratings in various market indicators. This step could open a new window through which a significant portion of the enlisted private-sector participants would be made accountable for the impact of their activities. It will also create additional demand for direct green finance from banks as companies will be more interested in investing in environmentally friendly projects. Companies introducing Intellectual Property Office (IPO) and debt issuance for a green project can also be incentivized through concessional registration and transaction costs.

Figure 6.8 illustrates a sample of technology credit guarantee system from Korea. In this model, the Korea Technology Finance Corporation (KOTEC) evaluates the potential of technologies owned by companies and provides guarantees based on a technical evaluation, allowing technology finance to become an effective policy tool to support investment in technology development and innovation with significant positive externalities on the Korean economy. Bangladesh could establish a similar model in which an independent, specialized agency provides businesses with a green-credit guarantee to incentivize FIs to provide access to financing to those businesses trying to adapt technologies and practices that make them more environmentally sustainable.

 **Figure 6.8** KOTEC Guarantee Model in Korea



Source: Korea Technology Finance Corporation (KOTEC).

Sustainable public procurement can also be used as an incentive to drive markets toward sustainable production. Bangladesh spends about US\$ 25 billion on public procurement annually. This is equivalent to about 40 percent of the government's annual budget. Directing public procurement towards sustainable sourcing would generate a demand for green goods, green technologies, and green services, and this demand will invite investment in the relevant sectors. Suppliers can be incentivized to not only produce more ecologically sustainable products, but to also adjust their production processes and supply chains to minimize their environmental impact. Additionally, government funding can encourage and drive green-product innovation, since large government contracts can reduce the perceived risk for the development of new products. Furthermore, government funding can provide assurance of a long-term forecast of their finances. Until the 2023 Sustainable Public-Procurement Policy is enacted, templates and standard bidding documents for public entities provided by the CPTU could be used by all public entities.

Fostering a collaborative institutional arrangement implementing green financial incentives could provide an enabling environment to effectively connect the flow of financing to sectors that need to go green. The key steps are outlined in Figure 6.9, which shows the components and flows making up a government framework for green growth.

To get started, some steps require simple analytical studies before being implemented, while others may require the adoption of regulations. The establishment of a comprehensive data-measurement and analytical system, as outlined under Recommendation 1, would help strengthen the implementation of the outlined steps.

Boost the private-sector's adoption of green practices and technologies, and boost the offering of green products and services.

Gaps identified through this study will need further analysis regarding the up-front financing required, estimated reductions in pollution, partnerships to implement, and so on. For example, guarantee schemes may work for some sectors while others may require a partial tax along with the use of the revenues to finance supporting programs for developing green know-how, technologies, products, and industries. A list of current and new incentives to consider is provided in **Table 6.2**.

 **Table 6.2** Current and New Incentives to Reduce Risks Perceived by Financiers

Current Incentives	New incentives
<p>Expand the list of eligible products included in revolving financial scheme operated by the BB.</p> <p>Expand the Green Technologies Fund and Green Transformation Fund to include manufacturers and big polluters that focus on the domestic market.</p> <p>Introduce additional tax exemptions for green investment, income from green investments, green products, and investments in biodiversity and ecosystem conservation activities, as suggested by the Bangladesh Climate Framework.</p> <p>Expand the mandates for PKSF and SME Foundation with concrete investment targets for greening MSMEs.</p> <p>Connect the DoE environmental assessments to be readily used by various agencies as part of their financial assessments.</p> <p>MoEFCC to expand eco-certification program for key sectors.</p>	<p>The MoEFCC and NBR could offer tax deductions for key impact areas, such as for the installation of environmental conservation facilities and for the purchase of recycled waste resources.</p> <p>The MoF, MoEFCC, and NBR could implement the polluters-pay principle through carbon and fossil fuel taxes. Also, an emissions-trading system could be applied to the goods and services produced by polluting industries in the form of additional taxes, including VAT.</p> <p>The government could foster or support a green-guarantee scheme to minimize perceived risk to financial institutions.</p> <p>The MoF could create a green fund by using the resources from emissions and pollution taxes. The fund could be leveraged with refinancing schemes and would be used to support SMEs and restore degraded natural ecosystems.</p> <p>BB, PKSF, and SME Foundation could offer financing for cluster-based or community-organized green projects.</p> <p>BB could foster mix green concessional grants and loans with blended finance schemes to provide financing on terms that would make the projects financially viable, such as for low-carbon, climate-resilient infrastructure (MoF 2020; OECD 2020).</p> <p>The CPTU, under the Planning Commission, could promote green public procurement to boost demand for eco-certified products.</p> <p>The MoF, BB, and BSEC could align green and blue bonds with the green-growth action plan. This alignment would include establishing clear standards with a third-party assurance system for green claims made by corporate-bond issuers, reducing transaction costs, and creating a green taxonomy for green bonds.</p>

Recommendation 3

Boost Institutional and Borrower Capabilities

Bangladesh has established diverse green initiatives spanning finance, banking, ICT, tourism, and hospitality sectors. These include green banking units, online banking, green financing, climate-risk funds, and ICT-driven electrical—and electronic-waste management. The tourism and hospitality sector emphasizes solid-waste management, green procurement, water conservation, energy efficiency, and local organic-product use. The demand for green skills is rising, covering such areas as green finance, policy, monitoring, auditing, ICT, electrical—and electronic-waste management, geographic information systems (GIS), eco-tourism, and environmental management (World Bank 2022). A 2022 World Bank report *Skill and Education for a Greener Bangladesh* recommends three pillars which are aligned with the recommendations from this study for boosting Knowledge and skills.

Box 6.6

Extended Producer Responsibility is an integral part of Integrated Plastic Waste Management

Although plastic represents around 10 percent of the solid waste in Bangladesh, it poses a serious threat to the environment as it is burned or openly dumped together with other solid-waste streams. One way to manage plastic waste more effectively is to implement an EPR scheme, which assigns the responsibility for the environmental impact of a product to its manufacturer. Such schemes include the collecting, taking back, recycling, and disposing of the product in an environmentally sound manner.

Finalization and piloting EPR guidelines is a pivotal opportunity to enable industry co-funding of plastic-waste collection and recycling systems in Bangladesh. The EPR guidelines should also set clear standards and establish a legal framework that imposes specific requirements such as eco-design standards, recycling targets, and take-back schemes. Recycling

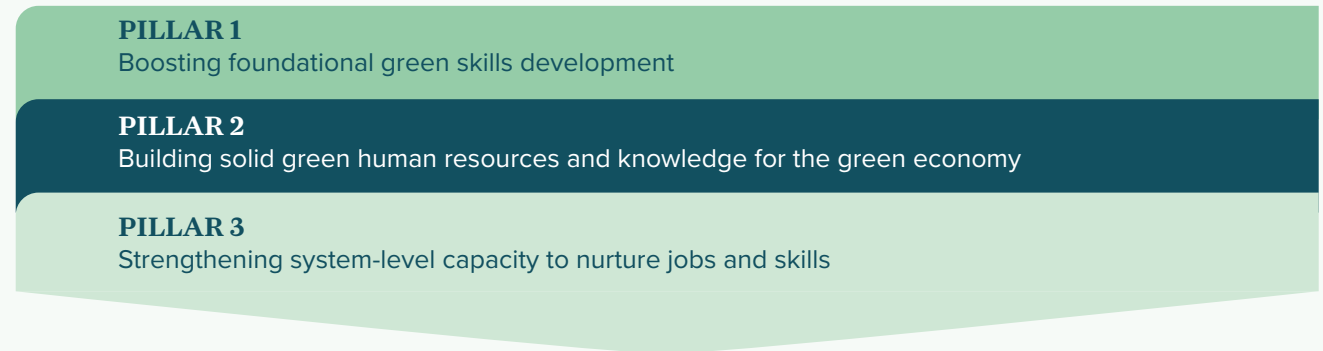
targets would promote development of collection systems for plastic waste and enable the recycling infrastructure necessary to meet these targets. Additionally, with a mandatory EPR system manufacturers will be obliged to use a certain percentage of recycled materials in their products, further promoting resource efficiency, cleaner production and a circular economy.

Currently, the recycling of plastics in Bangladesh is mostly informal and unregulated, posing challenges and opportunities for improvement. Development partners could support the Government of Bangladesh to provide capacity building for the informal waste sector to promote its integration, for example, through setting up semi-formal cooperatives of informal waste workers and integrating them into the collection infrastructure created by the EPR.

Build skills and expertise on green financing across sectors, from science and technology experts in government agencies to FIs, and from private businesses to students.

Strengthening capacity and awareness across government and financial institutions is essential for the development of supportive policies and regulations, and to overcome knowledge barriers that constrain investment in green projects (World Bank, 2022). Building foundational knowledge on green aspects and impacts across ministries would support the development of the needed policy framework and analysis. Importantly, it would provide overall educational and awareness-raising support in addressing opposition to green investment since such opposition can constrain investment and the development of the regulatory environment needed to advance green investing.

 **Figure 6.10** Pillars for Skills and Education for Greener Bangladesh



Source: World Bank (2022)



Speaking the same language is a necessary first step to addressing the barriers of insufficient know-how and capacity.

Starting with defining what classifies as green, creating a list of associated issues such as plastics production, and their associated impacts, for example, air pollution—making all this information available at the national level will enable the businesses, FIs, and domestic or international investors to speak the same language. This means that when borrowers apply for financing, they will be able to identify which aspect and impact they are addressing and provide evidence regarding problems to be addressed and solutions to be sought. Similarly, financiers will be able to understand the risks related to the solution being proposed.

Financial institutions need to train staff to factor in green aspects and impacts in all their operations.

This includes integrating risks and opportunities relevant to climate change and the energy transition in strategy, risk-management procedures, pricing models, governance structures, disclosure practices, and loan origination processes and securitization. Green practices and technologies are often new and untested. Consequently, financial analysts need to assess not only the borrower's financial viability but also the future potential of a proposed green practice and technology. This analysis would boost green investment and encourage more businesses to approach FIs with innovative green ideas. Financial institutions could build their own training programs or request the government to establish a green learning program.

Bangladesh's economy and labor market have the potential to expand green industries, such as transportation, plastic and other waste recycling, and ship recycling, to contribute significantly to a greener economy with the right policies and skills.

Environmental governance and management careers, vital for enforcing environmental regulations and promoting eco-friendly industrial practices, are gaining popularity among environmentally conscious youth (World Bank 2022).

Cottage, micro, small and medium-sized enterprises need support in improving their managerial and technical capabilities, to prepare and implement viable green projects for investment.

If entrepreneurs cannot prepare and implement viable green-project plans, lenders and investors will not provide resources to polluting sectors that want to go green. Most CMSMEs require support to prepare and submit the necessary documents when trying to get funding for green projects. They also need to access extension services to improve their understanding of the opportunities of going green and the consumer demand for green products and services in local and premium markets. In addition, such extension services support would CMSMEs in adopting and implementing green practices and technologies.

The SME Foundation could offer technical backstopping services to entrepreneurs by establishing a dedicated unit on the preparation of bankable projects and act as an intermediary between the FIs and the entrepreneurs.

The SME Foundation, with DoE support, could provide essential training to entrepreneurs in carbon-intensive CMSMEs to design projects for a smooth transition to a low-carbon path and potentially participate in the international carbon market.

The Government of Bangladesh could incorporate green growth and green financing into the curriculums of colleges, universities, and government-related training academies to boost investment and associated technical knowledge for analyzing proposed projects, products, or technologies as a green solution for the present or future.

The National Education Policy of 2010 lays out the skills necessary to implement the national plans. This policy could be updated to include the skills necessary to help address the barriers identified in this report. Such updates could create an enabling environment for green financing to support Bangladesh's green-growth agenda.

Develop a pipeline of training to adopt across government, businesses, and financial institutions. Introducing technical courses on green technologies and business in vocational institutions, promoting and building service institutions to lend services to entrepreneurs on green-related topics, strengthening banks' and financial institutions' personnel working in sustainable-finance units to deal with ESG and the potential of green technologies and projects, and providing training on sustainability and sustainable financing for different levels of government officials are some examples of training to be adopted by entrepreneurs and CMSMEs, finance providers, and government institutions (Table 6.3). This could disseminate knowledge on sustainability and green finance to society and contribute to addressing some of the barriers affecting investment in sustainable projects and initiatives.



Table 6.3 Components of the Training Pipeline to Advance Financing of Green-Growth Policy, Investment and Market Approaches in Bangladesh

For entrepreneurs and CMSMEs

- a. Introduce technical courses on various green technologies and green issues in vocational institutions.
- b. Promote and build service institutions to lend services to entrepreneurs on green issues.
- c. The SME Foundation could establish a dedicated unit to offer technical backstopping services to CMSMEs on bankable project preparation, ESG, and financial-management issues to facilitate entrepreneurs' access to green finance from lending institutions.
- d. The SME Foundation, with support of DoE, could help entrepreneurs develop projects for carbon-intensive SMEs to reap the benefits of the international carbon market for their transition to a low -carbon path.

For finance providers

- a. Strengthen banks' and FIs' sustainable financial units by employing skilled human resources to deal with ESG and the potential of green technologies and projects.
- b. Introduce an ICT-based centralized system with financial information on borrowers – create a system of financial background checks to minimize people taking advantage of the system. Could be done by BB.
- c. The BB and domestic banks could set up agent banking to receive applications from entrepreneurs in outreach areas.

For other service providers

- a. The PKSf could align some of its core objectives with green growth, such as technology transfer and value-chain development, with a focus on micro entrepreneurs.
- b. The PKSf could access the GCF for climate proofing of CMSMEs engaged in green growth in climate-vulnerable areas.

Government


- a. The Civil Service Administration Academy could conduct training on sustainability and sustainable financing of all cadres at entry and mid-level.
- b. The NAPD could conduct separate training for officials of MoF and the Planning Commission.
- c. The NILG could organize training sessions on environmental sustainability, green growth, and green finance for the officials and elected representatives of city corporations, municipalities, *upazila parishads*, and *union parishads*.

Source: World Bank

6.4 Green Finance Roadmap for Green Growth in Bangladesh

The recommended action presented in this chapter is a mixture of policy choices spanning from institutional to regulatory aspects. The action is recommended is a good starting point for Bangladesh to establish momentum for green-finance delivery for projects to promote an environmentally sustainable economy. The action recommended in Tables 6.4-6.6 would enable a gradual transition to a low-carbon economy that promotes green growth—growth that is both environmentally sustainable and socially inclusive.



 **Table 6.4** Short-Term (1–2 Years) Action to Facilitate Financing of Green Growth in Bangladesh

Intervention	Recommended Action	Barrier addressed
Governance framework for green growth	<p>Setup system to track the inflow of foreign resources and publicly disclose the use of these funds to create trust in the capital market and to attract sustainable investors.</p> <p>Does it exist? Partially</p>	<p>Inadequate in-house technical capacity faced by financial institutions</p> <p>Who benefits? Investors</p> <p>Who could implement it? The MoF, BB, BIDA, BSEC, and others</p>
	<p>Set up a separate unit to evaluate green technologies, products, and services to provide technical assistance to evaluate their future potential.</p> <p>Does it exist? No</p>	<p>Inadequate in-house technical capacity faced by financial institutions.</p> <p>A lack of a project pipeline to attract foreign investment in green sectors.</p> <p>Who benefits? Financial institutions</p> <p>Who could implement it? The MoEFCC to lead, but it will also require the training of experts within the financial institutions</p>
	<p>Develop and approve the national green taxonomy (a framework for defining what can be called environmentally sustainable investment).</p> <p>Does it exist? No</p>	<p>Inadequate expertise to evaluate green technologies and investment.</p> <p>A lack of a project pipeline to attract foreign investment in green sectors.</p> <p>Who benefits? Investors, Financial institutions, Borrowers</p> <p>Who could implement it? MoEFCC and MoF</p>

Intervention Incentives

Recommended Action

The **BB and domestic banks reduce instalment size and extend grace period** to lessen fiscal burden on entrepreneurs seeking green finance loans.

Does it exist?

No

Barrier addressed

Stringent requirements faced by borrowers

Who benefits?

Borrowers

Who could implement it?

The BB to take policy decisions to further rationalize loan-repayment tenure, reduce instalment size and grace period, and address other factors applicable to green finance transactions.

Commercial banks and financial institutions to implement policy decisions.

The above actions should increase banks and financial institutions' loan disbursements from their current level.

Recommended Action

Carry out further analysis to determine the right mix of fiscal incentives to address high-polluting industries, boost green markets, and attract private investments.

Does it exist?

Yes

Barrier addressed

Low-risk appetite.

Short-term focus.

Who benefits?

Borrowers, Financial institutions, Investors

Who could implement it?

MoEFCC with MoF

Recommended Action

Adopt green guarantee scheme to minimize perceived risk to financial institutions (this is a credit-guarantee program to lessen lenders' risks in issuing green loans).

Does it exist?

Partially

Barrier addressed

Low-risk appetite

Short-term focus

Stringent requirements faced by borrowers

Who benefits?

Financial institutions, Borrowers

Who could implement it?

The BB to introduce credit-guarantee scheme dedicated to green finance.

Intervention
Capabilities

Recommended Action

Strengthen sustainable finance units (SFUs) with skilled human resources to (a) evaluate green products, projects, and technologies more readily; and (b) monitor the different phases of project implementation and activities. These will reduce the perception of green-financing risk for banks.

Does it exist?

Yes

Barrier addressed

Inadequate in-house technical capacity faced by financial institutions

Who benefits?

Borrowers

Who could implement it?

Banks to implement in their own offices.

The BB to provide guidance on skills and certification to be required for officials engaged in green financing operations.

Recommended Action

Setup banking agents in outreach (remote, less accessible, underserved) areas to receive applications from entrepreneurs there to enable them to access green finance.

Does it exist?

Partially

Barrier addressed

Limited know-how and capacity to prepare bankable green projects faced by borrowers.

A lack of a project pipeline to attract foreign investment in green sectors.

Who benefits?

Borrowers, Investors

Who could implement it?

The BB to take policy decisions to allow financial institutions to employ agent banking for receiving loan applications in outreach areas.

Recommended Action

Establish a dedicated unit to help entrepreneurs overcome barriers to accessing finance.

Does it exist?

No

Barrier addressed

Limited know-how and capacity amongst borrowers to prepare bankable green projects.

Who benefits?

Borrowers

Who could implement it?

The SME Foundation to set up a dedicated unit within its institutional structure at its headquarters and branches to help entrepreneurs have smooth access to green finance.

Recommended Action

Integrate carbon pricing into the Government of Bangladesh's climate strategies.

Does it exist?

No

Barrier addressed

The lack of interagency coordination.


The lack of a project pipeline to attract foreign investment in green sectors.

Who benefits?

Government, Borrowers

Who could implement it?

The government to finance some of its environmental initiatives through decarbonization projects and carbon-pricing instruments.

 **Table 6.5** Medium-Term (2–3 Years) Action to Facilitate Financing of Green Growth in Bangladesh

Intervention Governance framework for green growth	<p>Recommended Action</p> <p>Adopt a national green growth action plan backed by an appropriate combination of regulatory and institutional frameworks.</p> <p>Does it exist?</p> <p>No</p>	<p>Barrier addressed</p> <p>The lack of interagency coordination</p> <p>Who benefits?</p> <p>Government, Borrowers, Financial institutions, Investors</p> <p>Who could implement it?</p> <p>MoF and MoEFCC to lead</p>
	<p>Recommended Action</p> <p>Establish a complementary green finance action plan for greening the industrial and service sectors.</p> <p>Does it exist?</p> <p>No</p>	<p>Barrier addressed</p> <p>The lack of interagency coordination.</p> <p>The lack of a project pipeline to attract foreign investment in green sectors.</p> <p>Who benefits?</p> <p>Government, Borrowers, Financial institutions, Investors</p> <p>Who could implement it?</p> <p>MoF, MoEFCC, and MoI to lead, but the BB, BSEC, and BIDA should be key participants</p>
	<p>Recommended Action</p> <p>Constitute a high-level national oversight body to monitor progress in greening economic growth.</p> <p>Does it exist?</p> <p>No</p>	<p>Barrier addressed</p> <p>The lack of interagency coordination</p> <p>The lax enforcement of laws against environmental offenders</p> <p>Who benefits?</p> <p>Government, Borrowers, Financial institutions, Investors</p> <p>Who could implement it?</p> <p>MoF and MoEFCC to lead</p>

Intervention
Governance
framework for
green growth

Recommended Action

Engage local government bodies to have strong oversight to safeguard environmental and ecological services at the grassroots in local-level project development, planning, and implementation.

Does it exist?

No

Barrier addressed

The lack of interagency coordination

Who benefits?

Borrowers

Who could implement it?

The MoLG, with support from the MoEFCC, to lead in formulating policies to safeguard environmental and ecological services at the grassroots

Recommended Action

Internalize green-accounting system and introduce green budgeting with a sound tracking system of resource allocation and expenditure for promoting inclusive green growth.

Does it exist?

No

Barrier addressed

The lack of interagency coordination.

The lack of a project pipeline to attract foreign investment in green sectors.

Who benefits?

Government, Borrowers, Financial institutions, Investors

Who could implement it?

MoF and MoEFCC to lead in introducing green budgeting

Recommended Action

Adopt policy and strategy to establish a system for collecting point-source data to monitor pollution levels and contribute to the analysis by financial institutions.

Does it exist?

Partially

Barrier addressed

The lax enforcement of laws against environmental offenders

Inadequate in-house technical capacity faced by financial institutions

The high cost of doing business

Who benefits?

Government, Financial institutions, Borrowers, Investors

Who could implement it?

The MoEFCC, DoE, and a2i to lead

Recommended Action

Strengthen capacity for monitoring, reporting, and verification to enable commercial lending institutions and BSEC to streamline the monitoring of green-finance impacts.

Does it exist?

Partially

Barrier addressed

Inadequate in-house technical capacity faced by financial institutions.

The lack of a project pipeline to attract foreign investment in green sectors.

The high cost of doing business

Who benefits?

Financial institutions, Investors

Who could implement it?

The MoEFCC, BB, and BSEC to lead in creating policies and practices that promote monitoring, reporting, and verification

Intervention Incentives	Recommended Action Strengthen the capital market to promote alternate financing by using innovative bonds. Does it exist? Partially	Barrier addressed High capital investment Who benefits? Borrowers Who could implement it? The MoF, BB, and BSEC to lead in enabling a conducive atmosphere for green investment by using green and blue bonds
Intervention Capabilities	Recommended Action Introduce an ICT-based centralized system with borrowers' financial information to enable the BB and lending agencies to have strong oversight of ESG and green finance impact. Does it exist? Partially	Barrier addressed The high cost of doing business for financial institutions Low-risk appetite Short-term focus Stringent requirements faced by borrowers Who benefits? Financial institutions, Investors, Borrowers Who could implement it? The BB to institute a robust ICT-based setup in its Sustainable Finance Division. The setup to include a network with banks and financial institutions to monitor environmental-safeguard compliance in every stage of project implementation, including the business-operations phase
	Recommended Action Provide training on sustainability and sustainable financing to civil servants within the MoF, Planning Commission, city corporations, and so forth. Does it exist? Partially	Barrier addressed Inadequate expertise in government agencies to evaluate green technologies and investment Who benefits? Government, Borrowers Who could implement it? The Bangladesh Civil Service Administration Academy
	Recommended Action Undertake a national awareness-building campaign to promote green products and services among consumers. This will contribute to achieving a national green growth vision. Does it exist? No	Barrier addressed The low demand for green products Who benefits? Consumers, Borrowers Who could implement it? Relevant government ministries such as the MoI, MoA, MoEFCC, and the Ministry of Information and Broadcasting (MoIB) direct their subordinate agencies to pursue a nationwide campaign

Table 6.6 Long-Term (3–5 Years) Action to Facilitate Financing of Green Growth in Bangladesh

<p>Intervention Governance framework for green growth</p>	<p>Recommended Action Introduce an environmental management system to ensure SMEs comply with international standards.</p> <p>These include the ISO 14000 set of standards on environmental management, and the ISO 9000 set of standards for organizations to ensure they comply with regulation.</p> <p>Does it exist? Partially</p>	<p>Barrier addressed The lack of capabilities to adopt and implement green practices and technologies. The high cost of doing business. Inadequate expertise to evaluate green technologies and investment.</p> <p>Who benefits? Borrowers, Financial institutions, Investors</p> <p>Who could implement it? The MoI and SME Foundation to lead in introducing environmental management systems in SMEs. The new industrial and Bangladesh export policies recognized the importance of motivating SMEs to introduce environmental management systems and follow ISO guidelines. In the long run, this will expand opportunities for Bangladeshi products in international markets</p>
<p>Intervention Incentives</p>	<p>Recommended Action Implement the polluters-pay principle through carbon and fossil-fuel taxes and emissions trading system.</p> <p>Tax, in the form of additional taxes and VAT, goods and services produced by polluting industries.</p> <p>Does it exist? No</p>	<p>Barrier addressed The lax enforcement of laws against environmental offenders. Low demand for green products.</p> <p>Who benefits? Borrowers, Consumers</p> <p>Who could implement it? The NBR to lead this and execute the polluter-pays principle with support of the MoF and MoEFCC</p>

Intervention
Incentives

Recommended Action

Create a green fund using the resources raised from tax on emissions and pollution taxes, etc.

This fund to be leveraged with refinancing schemes for SMEs and restore degraded natural ecosystems.

Does it exist?

No

Barrier addressed

Lax enforcement of laws against environmental offenders.

The low demand for green products

Who benefits?

Borrowers

Who could implement it?

MoEFCC and MoF to lead in setting up a green fund with clear objectives for using these resources for green activities

Recommended Action

Introduce cluster financing for shared technologies or practices adopted among related businesses.

This will enable entrepreneurs to have enhanced access to finance.

Does it exist?

No

Barrier addressed

High capital investment.

Stringent requirements faced by borrowers.

Who benefits?

Borrowers

Who could implement it?

The BB to introduce a cluster-financing scheme on a pilot basis.

Based on the success of the policy decision, this could be scaled up

Recommended Action

Establish green public procurement to boost demand for eco-certified products.

Does it exist?

No

Barrier addressed

The low demand for green products

Who benefits?

Borrowers

Who could implement it?

The CPTU under the Planning Commission

Intervention
Capabilities

Recommended Action

Prepare projects to access the GFC for resilience building of climate-vulnerable SMEs in coastal areas.

Does it exist?

Partially

Barrier addressed

The lack of capability to adopt and implement green practices and technologies.

Limited know-how and capacity to prepare bankable green projects

Who benefits?

Borrowers

Who could implement it?

The SME Foundation, PKSf, MoF, DoE, and BB

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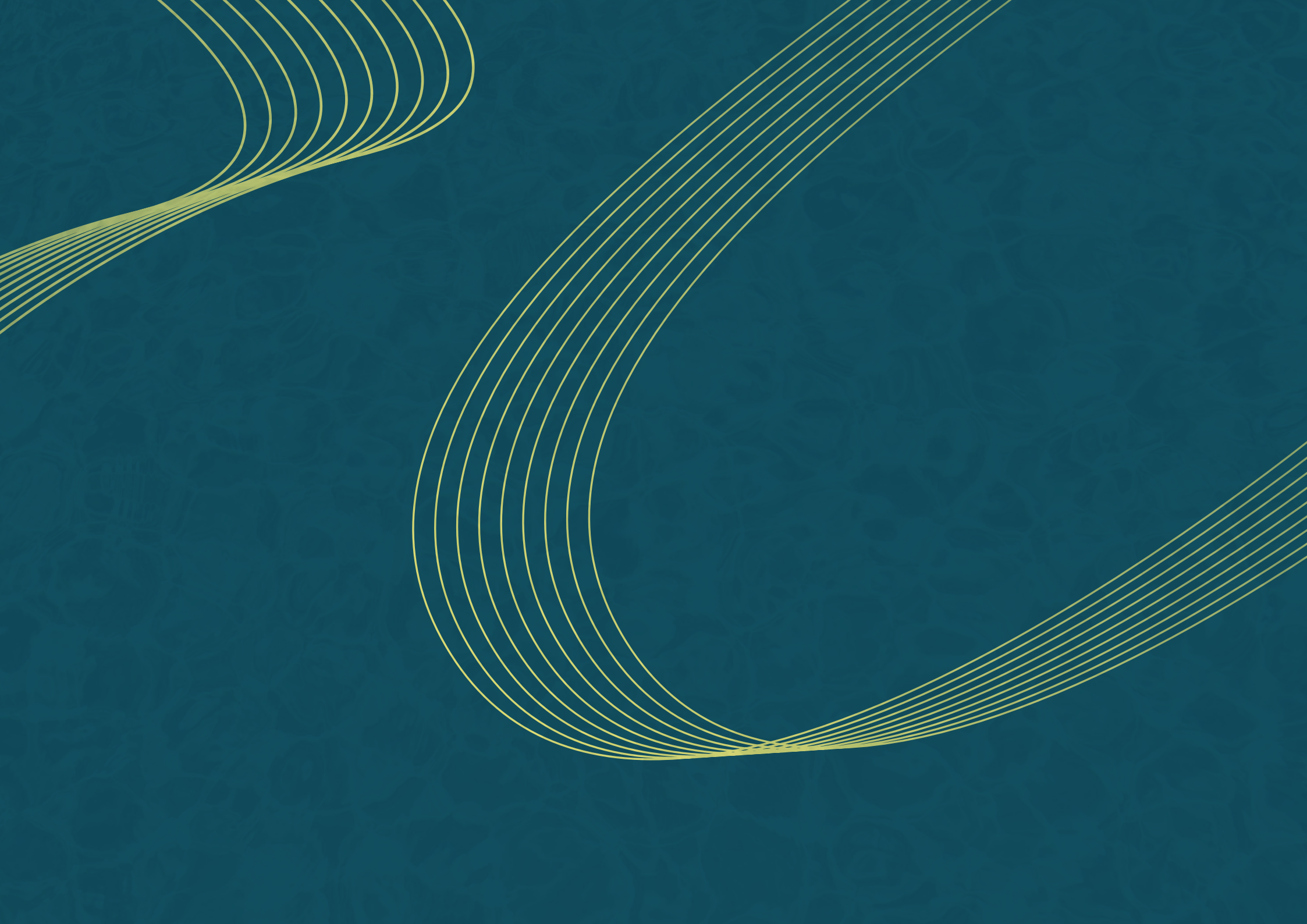
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Conclusion



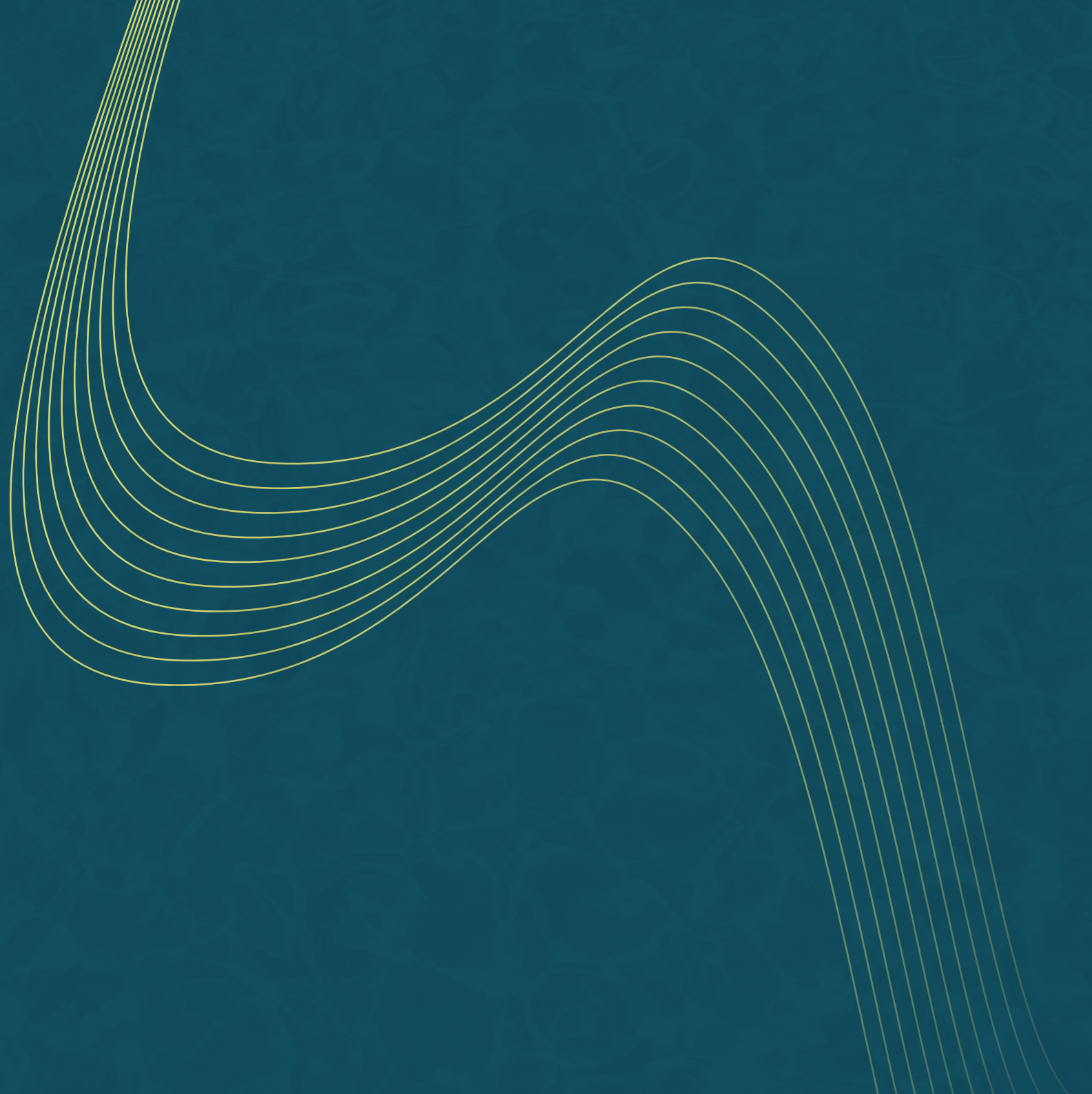


In conclusion, the Bangladesh Green Growth Framework advisory document offers a comprehensive roadmap for realizing the country's priority development opportunities through the promotion of green growth. The document synthesizes the critical issues of environmental degradation, climate change, and energy security, and emphasizes the need for new growth engines for the sustainable economic development of Bangladesh.

The document outlines three main objectives and nine policy directions that should be prioritized and implemented by key stakeholders in a coordinated manner. It provides specific recommendations for each policy direction, covering areas such as environmental governance, green industries, and coastal resilience, highlighting the importance of integrating green growth principles into priority sectors of the economy.

Furthermore, the document emphasizes the importance of an institutional ecosystems approach to mobilize green finance into green growth investments. It offers recommendations to address existing challenges in green finance, such as enhancing institutional governance, using incentives to boost environmental markets, and building awareness and expertise on green financing across sectors. By implementing these recommendations, Bangladesh can accelerate the flow of resources from green finance providers to the sectors most in need, ultimately enabling sustainable and resilient economic growth.

Overall, the document provides a strategic and holistic approach to transition towards green growth in Bangladesh, emphasizing the importance of prioritization, institutional strength, coordination, regulations, and incentives. The document lays out the potential for Bangladesh to become a leader in environmentally sustainable and socially inclusive growth.





Annexes

Annex 1

Green-growth recommendations from key sources

Within this section, a compilation of green growth suggestions is outlined, drawing from significant publications by both the Government of Bangladesh and the World Bank. These documents encompass the Bangladesh Delta Plan 2100, Nationally Determined Contributions, the National Adaptation Plan, the World Bank's Country Climate and Development Report on Bangladesh (2022), and the World Bank's Umbrella Investment Program (UIP). These recommendations have been categorized according to the objectives of the green-growth framework introduced in this document.

This section consolidates a wealth of green-growth recommendations extracted from key governmental and World Bank publications. By categorizing these recommendations in alignment with the proposed green-growth framework, this section serves as a vital reference point for strategic planning and informed decision-making. It enables stakeholders to access a structured overview of pertinent guidelines that hold the potential to drive effective policies, interventions, and investments towards a resilient and environmentally conscious trajectory for Bangladesh's growth. Below is a mapping of potential priorities from the key national and World Bank analytics that align under the proposed Bangladesh Green-Growth Framework objectives.

Objective 1: Facilitate effective environmental governance and energy transition

Bangladesh Delta Plan 2100

- Study for harnessing the waters of the Brahmaputra River
- Sustainable Restoration of Connectivity of Major Navigation Routes

World Bank CCDR

- Strengthen the power grid to optimize use of generation assets and integrate renewable energy
- Adopt National Logistics Development Policy and decrease road transport with increased transport by rail and waterways

Nationally Determined Contribution

- Install new combined cycle gas-based power plants (3,208 MW)
- Install prepaid meters
- Introduce improvements to ease road traffic congestion
- Improve and enhance the WIT system

World Bank UIP

- Waste-to-energy plant in NCC and 6MW waste energy

Objective 2: Foster new growth engines and skills for green growth

Bangladesh Delta Plan 2100

- Integrated Coastal Zone Land use Planning in Bangladesh using GIS and remote-sensing technology
- Development of Climate Smart Integrated Coastal Resources Database (CSICRD)
- Enhancement of Agricultural Productivity towards Food Security in Char Lands

World Bank CCDR

- Leverage financing mechanisms for locally led climate action
- Scale up nature-based solutions for resilience, carbon sequestration, ecosystem services, and livelihoods
- Implement energy efficiency and circular economy solutions in ready-made garments and textile factories and energy efficiency building standards

Nationally Determined Contribution

- Improve the efficiency of the existing gas turbine power plants (570 MW)
- Encourage use of energy-efficient appliances in household and commercial buildings
- Reduce the use of ozone-depleting gases (HCFCs) in air conditioning by 2025

World Bank UIP

- A feasibility study related to online ETP monitoring
- Safe water supply project through environment friendly solar desalination unit

National Adaptation Plan

- Development of a national drought monitoring system
- Development of climate-ready open-water fisheries management
- Development of fish industries based on climate-sensitive crop zones
- Develop and update ocean ecosystem management policies, guidelines and institutional capacities for management of the blue economy

Objective 3: Achieve a just transition, enabling a resilient, green, and healthy society

Bangladesh Delta Plan 2100

- Study on Integrated Management of Drainage Congestion for Greater Noakhali
- Study on Tidal River Management
- Program for Implementation of Rationalized Water Related Interventions

World Bank CCDR

- Integrate climate migration into planning and development for select secondary cities and towns
- Develop and implement clean air programs to reach World Health Organization PM_{2.5} interim targets

National Adaptation Plan

- Integrated management of coastal polders, sea dikes and cyclone shelters against tropical cyclone, sea-level rise and storm surges
- Protection and management of potentially vulnerable areas
- Strengthen early warning and dissemination services
- Community-based rainwater harvesting
- Drainage management of economic/industrial zones
- Crop diversification/intensification for natural resources optimization and reduction of climate stress

Nationally Determined Contribution

- Ban use of FCKs and encourage use of advanced technology
- Introduce rice varietal improvement
- Implement afforestation and reforestation in the coastal areas

World Bank UIP

- Implementation of zero liquid discharge system in effluent treatment system in ETPs
- Zero discharge of hazardous chemicals
- Block the sources of river pollution and ensure flow of river water

Annex 2

Mapping of projects or investments to the Green-Growth Framework–Longlist

Objective 1: Facilitate Effective Environmental Governance and Energy Transition

Source Document	Category	Policy direction	Intervention
BDP2100 (80 projects)	Project	Diversify primary energy sources through decarbonization of generation and cross-border trade of renewable energy.	Study for harnessing the waters of the Brahmaputra River.
			Sustainable restoration of connectivity of major navigation routes.
CCDR	Investment	Diversify primary energy sources through decarbonization of generation and cross-border trade of renewable energy.	Strengthen the power grid to optimize use of generation assets and integrate renewable energy.
		Promote the development of inclusive and green-transport systems and connectivity.	Adopt National Logistics Development Policy and decrease road transport with increased transport by rail and waterways.
NDC	Recommendation	Diversify primary energy sources through decarbonization of generation and cross-border trade of renewable energy.	Implement renewable energy projects of 911.8 MW: grid-connected Solar, 581 MW; Wind, 149 MW; biomass, 20 MW; Biogas, 5 MW; new hydro,100 MW; solar mini-grid, 56.8 MW.
			Install new combined cycle gas-based power plants (3,208 MW).
			Install prepaid meters.

Source Document	Category	Policy Direction	Intervention
NDC	Recommendation	Promote the development of inclusive and green transport systems and connectivity.	Introduce improvements to ease road traffic congestion (5 percent improvement in fuel efficiency).
		Promote the development of inclusive and green transport systems and connectivity.	Make the modal shift from road to rail (10 percent modal shift of passenger kms) through implementation of different transport projects such as bus rapid transit (BRT), mass rapid transit (MRT) in major cities, multi-modal hub creation, the Padma Bridge, etc.
			Improve and enhance the IWT system: improve navigation for regional, sub-regional, and local routes; improve maintenance of water vessels to enhance engine performance; introduce electric water vessels, etc.
UIP Dhaka	Project	Diversify primary energy sources through decarbonization of generation and cross-border trade of renewable energy.	Waste-to-energy plant in Narayanganj City Corporation (NCC) and 6 MW waste energy.

Objective 2: Foster New Growth Engines and Skills for Green Growth

Source Document	Category	Policy direction	Intervention
BDP2100 (80 projects)	Project	Leverage smart technologies for natural capital (marine, agri-, and forest resources).	Integrated Coastal Zone Land-Use Planning in Bangladesh using GIS and remote sensing technology.
			Morphological dynamics of Meghna estuary for sustainable char development.
			Development of the CSICRD.
		Exploration of the production potential of coastal saline soils of Bangladesh.	
		Promote greening of brown industries and their supply chains.	Enhancement of agricultural productivity towards food security in char lands.
CCDR	Investment	Leverage smart technologies for natural capital (marine, agri-, and forest resources).	Leverage financing mechanisms for locally led climate action.
		Promote greening of brown industries and their supply chain.	Invest in the transformation of the agri-food sector.
			Scale up NbS for resilience, carbon sequestration, ecosystem services, and livelihoods.
			Invest in energy-efficient and climate-resilient housing and urban infrastructure.
Implement energy efficiency and circular economy solutions in ready-made garments and textile factories and energy-efficiency building standards.			
Agriculture and livestock climate-smart investments and policies.			

Source document	Category	Policy direction	Intervention
NDC	Recommendation	Promote greening of brown industries and their supply chains.	Improve the efficiency of the existing gas-turbine power plants (570 MW).
			Achieve 10 percent energy efficiency in the industry sub-sector through measures detailed in the EECMP.
			Operationalize 5,925 solar irrigation pumps (generating 176.38 MW) for agriculture.
			Encourage use of energy-efficient appliances in household and commercial buildings (leading to 5 and 12 percent reductions in emissions respectively).
			Reduce the use of ozone-depleting gases (HCFCs) in air conditioning by 2025, as per the Montreal Protocol targets.
			Improve manure management through promotion of mini biogas plants (57,000).
NAP	Intervention	Leverage smart technologies for natural capital (marine, agri-, and forest resources).	Development of a national drought monitoring system.
			Extension of climate-smart technologies for increasing irrigation water-use efficiency.
		Strengthen the capacity of citizens to adapt to an inclusive climate-resilient economy.	Extension of climate-resilient technology for combating climate-related stresses in aquaculture.

Source Document	Category	Policy direction	Intervention
NAP	Intervention	Promote investments in the blue economy and develop technical capacity.	Development of climate-ready open-water fisheries management.
			Development and management of coastal and marine fisheries to foster the blue economy.
			Monitoring, evaluation and enforcement for ensuring the conservation of fish biodiversity and habitat.
			Development of shrimp culture planning and zoning.
			Improvement of post-harvest facilities and e-commerce-based market facilities for fisheries and aquaculture.
			Development of fish industries based on climate-sensitive crop zones.
			Monitoring of sea-surface temperature and other physical and biological parameters and marine species composition in the Bay of Bengal.
UIP Dhaka	Project	Leverage smart technologies for natural capital (marine, agri-, and forest resources).	A feasibility study related to online ETP monitoring.
			Pact: Partnership for Cleaner Textile.
			Online monitoring of ETPs.
			Safe water-supply project through environment friendly solar desalination unit.

Objective 3: Achieve a Just Transition, Enabling a Resilient, Green, and Healthy Society

Source Document	Category	Policy direction	Intervention
BDP2100 (80 projects)	Projects	Strengthen the capacity of citizens to adapt to an inclusive climate-resilient economy.	Program for implementation of rationalized water-related interventions in the Gumti-Muhuri Basin.
			Program for Implementation of rationalized water-related interventions in the Gorai-Passur Basin.
			Program for implementation of rationalized water-related interventions in the Baleswar-Tentulia Basin.
			Study on integrated management of drainage congestion for Greater Noakhali.
			Study on tidal-river management.
CCDR	Investment	Strengthen the capacity of citizens to adapt to an inclusive climate-resilient economy.	Integrate climate migration into planning and development for select secondary cities and towns.
	Recommendation	Improve public health and wellbeing through a cleaner environment.	Develop and implement clean air programs to reach WHO PM _{2.5} interim targets.
NDC	Recommendation	Improve public health and wellbeing through a cleaner environment.	Ban use of FCKs and encourage use of advanced technology and non-fired brick use (leading to 14 percent reduction in emissions).
		Strengthen the capacity of citizens to adapt to an inclusive climate-resilient economy.	Scale up use of alternate wetting and drying in dry season rice fields in 50,000 has of cropland.
			Introduce rice varietal improvement for 1,111,000 has of croplands.

Source Document	Category	Policy direction	Intervention
NDC	Recommendation	Strengthen the capacity of citizens to adapt to an inclusive climate-resilient economy.	Increase tree cover from 22.37 percent (2014) to 24 percent.
			Implement afforestation and reforestation in the coastal areas, islands and degraded areas–150,000 has.
			Restore the deforested forests–137,800 has in the hill and plain sal forests.
			Restore the degraded forests–200,000 has in the hill and plain sal forests.
			Plant trees along roadsides and embankments, and on private land.
NAP	Recommendation	Strengthen the capacity of citizens to adapt to an inclusive climate-resilient economy.	Integrated management of coastal polders, sea dikes and cyclone shelters against tropical cyclones, sea-level rise and storm surges.
	Intervention	Strengthen the capacity of citizens to adapt to an inclusive climate-resilient economy.	Management of freshwater resources and monitoring of salinity for reducing vulnerabilities in existing and potential salinity-prone areas.
			Protection and management of potentially vulnerable areas due to tropical cyclone, sea-level rise, extreme storm surges and flooding.
			Strengthen early warning and dissemination services for climate change-induced slow-onset and sudden extreme water hazards using ICT and artificial intelligence (AI).
			Community-based rainwater harvesting through indigenous techniques and conservation of wetlands, reservoirs and natural springs for drinking water supplies in hard-to-reach and water-stressed areas.
			Dredging of all major and medium rivers for accommodating and smooth drainage of excess floods during climate-induced extreme events.
			Construction and rehabilitation of flood and drainage management measures with eco-engineering solutions.
			Drainage management of economic/industrial zones and critical infrastructure and reinforced climate-resilience through risk assessment.
			Internal drainage management and climate-resilient development of the char and islands areas.
Protection against flash floods, wave action, erosion and sedimentation.			

Source Document	Category	Policy direction	Intervention
NAP	Intervention	Strengthen the capacity of citizens to adapt to an inclusive climate-resilient economy.	Erosion risk management through erosion prediction, improved early warning and its dissemination.
			Sustainable shoreline erosion management based on eco- or bioengineering measures.
			Ecosystem-based sediment management along coasts and in estuaries.
			Landslide early-warning systems and risk-management measures based on eco- or bioengineering measures.
			Implementation of thunderstorm- and lightning-risk management measures in highly-susceptible areas.
			Protection and enhanced resilience of climate migrants with a particular focus on gender and disability.
			Increase the resilience of vulnerable poor communities by introducing gender-, age- and disability-responsive diversified livelihoods, effective insurance mechanisms and climate resilience funds.
			Behavioral change and development of awareness among vulnerable communities for emergency responses and livelihood protection from climate-induced disasters.
			Increase the coverage of social security/social safety-net programmes for building community-based resilience and adaptive capacity.
			Introduction of risk transfer and insurance mechanisms for protection of critical and disaster-protection infrastructure, vulnerable MSMEs and farmers.
			Building climate-resilient houses, education and communication infrastructure in areas with high climate risk.
			Extension of stress-tolerant, pest- and disease-resistant rice and non-rice crops.
			Introduction and scaling up of innovative and indigenous agriculture.
			Crop diversification/intensification for natural resources optimization and reduction of climate stress.
Strengthening and development of impact-based early-warning systems and data management for agriculture.			
Validation and extension of indigenous knowledge-based adaptation techniques to combat climatic effects on fisheries.			

Source document	Category	Policy direction	Intervention
NAP	Intervention	Strengthen the capacity of citizens to adapt to an inclusive climate-resilient economy.	Extension and expansion of the coastal greenbelt for protecting coastal habitats, including the Sundarbans, mangroves, salt marshes, etc.
			Community-based afforestation and reforestation for biodiversity conservation, enhancement of ecosystem resilience and increased carbon sequestration.
			Expand ecosystem-based adaptation for the restoration of mangroves, hill areas and wetlands to tackle the adverse impacts of climate change.
			Conservation of agri-ecosystems through expanded agroforestry, good agricultural practices and regenerative agriculture.
			Improvement of surveillance, early-warning systems and monitoring of psychosocial impacts and mental-health risks from extreme weather events.
UIP Dhaka	Project	Improve public health and wellbeing through a cleaner environment.	Central liquid-waste treatment plan development. For this three <i>khals</i> /canals were selected. Haziganj-dapa <i>khal</i> , stadium-pithalipul and sostapur <i>khal</i> .
			Implementation of zero liquid discharge system in the effluent-treatment system of ETPs.
			Zero discharge of hazardous chemical.
			Give notice to the polluter (individual/industry).
			Action to reduce environmental pollution.
			Facilitation measures and investment for PPPs for industrial ETPs.
			Block the sources of river pollution and ensure flow of river water.
			Gazipur wastewater management pilot (under Dhaka Rivers Ecological Restoration Project Component 1).
Arsenic risk-reduction project for water supply.			

Source document	Category	Policy direction	Intervention
UIP Dhaka	Project	Improve public health and wellbeing through a cleaner environment.	Padma Surface-Water Treatment Plant (SWTP) Phase-II.
			Char Gandharbapur SWTP Phase-I.
			Char Gandharbapur SWTP Phase-II.
			Char Gandharbapur SWTP Phase-III.
			Saidabad SWTP Phase-III.

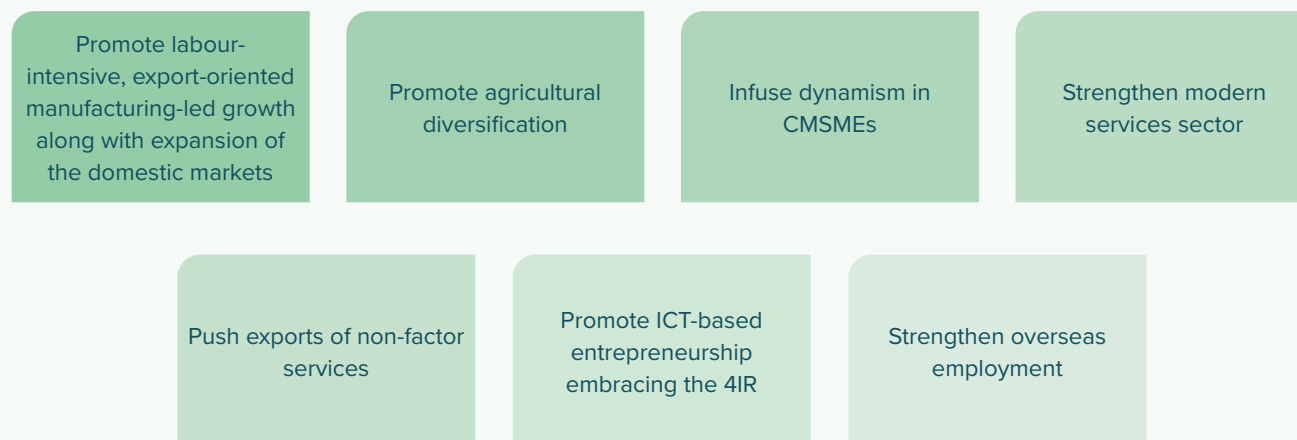
Annex 3

Entry Points from Bangladesh 8th Five-Year Plan

The following section discusses the entry points from national plans to target interventions for green-growth planning.

Green-growth entry points in the 8th FYP.

Bangladesh's five-year plans are designed to guide its transformation into Sonar Bangla, free from poverty, hunger, and corruption, but with rapid income growth and shared prosperity. The objectives outlined throughout the most recent five-year plan (2020–2025) are all priority actions for a green-growth plan. The pillars of green growth—economic, social, and environmental—are all identified, and there are salient entry points for green-growth approaches. There are seven pivotal themes in the 8th FYP, which highlight job creation as the main focus, as outlined here in Figure A3.1.



Although the 8th FYP explicitly commits to a green-growth strategy, this is currently narrowly defined under the environmental sector within the forest sub-sector. Green growth, more broadly understood, is an holistic economic-growth strategy rather than an environmental one. The 8th FYP describes it: “by integrating environmental and climate change considerations in the growth strategy, as proposed under PP2041, Bangladesh will adopt a green growth strategy. The specific strategies, policies, and institutional reforms include (a) integrating environmental costs into the Macroeconomic Framework, (b) implementing

the Delta Plan to build resilience and reduce vulnerability to climate change, (c) reducing air and water pollution, (d) removal of fuel subsidies; (e) adoption of green tax on fossil fuel consumption; (f) taxation of emission from industrial units; and (g) prevention of surface water pollution.” Yet, within the 8th FYP, environmental and climate-change considerations are not fully integrated into its growth strategy. The following diagnostic provides some first steps in shaping such a strategy.

Green Growth Diagnostic: Opportunities Identified in the 8th Five-Year Plan

The 8th FYP misses the opportunity to address environmental degradation negatively impacting the economy. Urbanization and industrial growth have come with high environmental costs that are increasingly harming Bangladesh's prospects of continued strong economic progress. Growth has featured uncontrolled urbanization and industrialization in a context of inadequate pollution control and poor management of natural resources that provide critical ecosystem services. Encroachment of wetland areas, inadequate waste management, and maintenance of drainage canals have increased cities' vulnerability to flooding and reduced their climate resilience. These worrying trends have adverse implications for the liveability and long-term sustainability of cities and the health and wellbeing of their inhabitants. In addition, environmental risks often affect women disproportionately. Reducing negative environmental externalities is a priority if Bangladesh is to continue to reduce poverty and achieve shared prosperity.

Urban environmental pollution is already imposing a significant cost on Bangladesh's economy. In 2015, the total number of annual deaths and disability-adjusted life years (DALYs) attributable to air pollution, inadequate water, sanitation, and hygiene; arsenic in drinking water; and occupational pollutants in urban areas is estimated at some 80,000 and 2.6 million, respectively, in 2015. In Dhaka alone, the corresponding estimates are almost 18,000 and 578,000. The economic cost of this mortality in terms of foregone labour output is estimated at US\$ 1.40 billion in all urban areas of Bangladesh, and US\$ 310 million in Dhaka alone. This is equivalent to 0.7 percent and 0.2 percent of Bangladesh's 2015 national GDP. Taking into account the broader welfare impacts of mortality that go beyond foregone labour output, the economic impact is estimated at US\$ 6.52 billion in urban Bangladesh and US\$ 1.44 billion in Dhaka alone, equivalent to 3.4 percent and 0.7 percent of the nation's 2015 GDP, respectively. These figures may be considered as the lower and upper ends of a plausible range of estimates of the economic cost of mortality attributable to quantifiable environmental health risks. In addition, the costs of productivity loss in the RMG industry due to air pollution, of intelligence quotient (IQ) loss among children exposed to lead from industrial sources, and of morbidity from air pollution and inadequate water, sanitation, and hygiene were estimated.

The 8th FYP should take an holistic approach to prioritize multi-sectoral solutions to respond to climate resilience and economic development goals. The stated goals of the 8th FYP emphasize the need to achieve social development through social protection and inclusion activities, and achieving the desired levels of economic growth, mostly through private-sector development. By incorporating the NAP and the NDC targets, however, the 8th FYP could provide a catalyzing effect for green-growth engines and regulatory reforms to respond to climate. Previously, there has been a false premise that pure trade-offs exist between economic growth, social protection and protecting the environment. Both recent research and case studies across national plans now show that there are win-win or no-regret job-creation scenarios – this is particularly true for key objectives in the 8th FYP. Certain industries, particularly in the services sector, can generate substantial employment and lower greenhouse gas emissions profiles.

The plan misses the opportunity for multi-sectoral solutions by taking a sectoral outlook. The 8th FYP has detailed ambitions for key brown sectors but fails to capitalize on multi-sectoral benefits. The plan does not acknowledge the significant interaction between environmental degradation and obstacles to these targets, such as poor public health, threatened livelihoods, and reduced

economic growth. This is particularly true for the energy sector, where efforts to increase domestic coal consumption and accelerate renewable energy production form parallel and opposing objectives. Moreover, this stands as an obstacle to accessing domestic and international green finance and investment.

The major gaps are:

- an absence of an operational framework to incorporate costs and benefits of positive and negative externalities into decision-making processes linked to economic growth projections;
- natural-resource management is not one of the top seven priorities: a missed opportunity given Bangladesh's vulnerability to climate change and its significant natural resource assets;
- there is a mismatch between energy strategy and environmental, health and inclusion goals;
- there are missed opportunities for green-growth engines in job creation and products.

Entry Points in the 8th Five Year Plan

- a. Roles and responsibilities: governance for implementation: the 8th FYP lacks proper institutional mechanisms and clear guidance on coordination between ministries, preventing green-growth policy uptake. The 8th FYP states clear goals that have significant synergies with a green-growth agenda. Because of the structural governance shortcomings, however, there are gaps in green-growth governance. If not addressed, these pose considerable obstacles in the effort to promote economic growth, safeguard the environment, and improve social protection. Green growth requires robust and coordinated governance, with ministries aligning on key policy objectives and strategies. The strategies mentioned in the 8th FYP were not designed in coordination with all relevant ministries, leading to siloed projects. Moreover, these strategies are then not linked at the sectoral level, preventing cross-cutting issues from being tackled with the full range of tools. This is particularly clear from Chapter 6: Monitoring and Evaluation, in which there is minimal interaction between sectoral development goals and indicators, despite being cross-cutting issues. Operating in such siloes reduces the efficacy and impact of policies and projects that could drive green growth.
- b. The numerous strategies and objectives identified lack prioritization and guidance in terms of selection. The comprehensive plan involves such an extensive portfolio of strategies and objectives that it impedes ready implementation. To prioritize competing objectives, the projects identified should be evaluated according to their green-growth impact and opportunities for synergies across objectives.
- c. Structural governance shortcomings aggravate major environmental problems in the country, because of data constraints; incomplete and lax environmental standards—including on environmental and social risk management; a weak monitoring and enforcement regime; limited control infrastructure; and other institutional capacity constraints. To implement a green-growth strategy, the relevant bodies and organizations to undertake remedying these shortcomings need to be identified.
- d. Positively, the 8th FYP does recognize these shortcomings concerning implementing a green-growth strategy. As it states: “in the first implementation phase, the 8th FYP will prioritize the ongoing efforts to reduce air and water pollution, strengthen forestry management, and implement the BDP2100. Efforts will be made to build up institutional capabilities, policies, and regulations for implementing environmental fiscal reforms (EFR) and developing the green growth strategy.”

Environmental Accounting to Facilitate Green Financing

Mitigating greenhouse gas emissions is not as urgent for Bangladesh as for other developed countries. Still, this moment provides a critical juncture to lay the groundwork for understanding and accounting for them within wider national plans. Bangladesh emits 0.56 tonnes of CO₂ per person, per annum, compared to 11.66 tonnes per person in the Republic of Korea (Our World In Data, <https://ourworldindata.org/co2/country/bangladesh?country=BGD~KOR>). However, greenhouse gas emissions also include PM_{2.5} emissions. In 2019, pollution caused nearly 275,000 premature deaths, of which more than half were from outdoor and household PM_{2.5} air pollution (World Bank 2022). As Bangladesh grows and industrializes, it must do so in as green a way as possible to protect the health and resources of its citizens.

The government has committed to improving the state of green accounting and budgeting at both macro and micro levels. The government is committed to developing comprehensive data on emissions from all major sources of economic activities; this should require mandatory reporting on greenhouse gas emissions from key economic players and build a national greenhouse-gas-inventory reporting system. This will be a pivotal part of the other accounting systems the government has committed to, including emissions

accounting, natural resource accounts, the computation of green GDP, and green budgeting. These will be the building blocks for the following environmental fiscal reforms (EFRs): tax exemptions for green investment, tax exemption on income from green investment, imposition of green tax on the product of green investment, and tax exemptions for the amount invested in biodiversity and ecosystem conservation activities. The CFF was adopted in 2014 and updated in 2020. It has been implemented to a limited extent, with little progress made on climate taxes, subsidies, and pricing policies that can play a part in mobilizing resources and incentivize the private sector to adopt climate-sensitive technologies and avoid polluting behavior.

Green financing must be a priority, both domestically and internationally. Yet, the only mention of climate finance relies on bodies, such as the GCF, to provide loans and support projects. Instead, domestically, Bangladesh could consider regulation rather than direct finance, which would support green industries, such as public credit guarantees. Bangladesh could review its taxation system more ambitiously in light of environmental benefits – the 8th FYP suggests it is open to revising taxes, such in the digital and energy sectors, or reducing urban car populations. Moreover, by encouraging the private sector to disclose carbon and environmental information, Bangladesh would encourage international finance for green industries and products. These regulatory changes could catalyze market-driven green growth.

Clean Energy Infrastructure and Access

The decarbonization of the economy finds is referred to under the environmental strategies of the 8th FYP rather than as a guiding principle for main objectives, such as in manufacturing, agriculture, and the development of SMEs. Although the plan recognizes the need for a long-term low-emission development strategy (LEDS), there are no steps to develop one within the 8th FYP. “These strategies seek to achieve social, economic, and environmental development goals while reducing long-term GHG emissions and increasing resilience to the effects of climate change.” This green-growth framework lays the foundations for such green-growth action.

This mismatch leads to conflicting policies around energy development as Bangladesh simultaneously pursues both coal and renewable energy development. PetroBangla, the state-owned oil and gas company, plans to continue developing one coal field and two additional energy resources – coal and gas fields. Yet, it recognizes the large initial investments required the development of these coalfields and the current reliance on expensive, low-quality imported coal. Moreover, as renewable energy sources continue to decrease in price and increase in efficiency, the development of further coal production is liable to turn into stranded assets. Finally, coal power contributes extensively

to air pollution, a major environmental problem across Bangladesh that the 8th FYP acknowledges is partly due to coal-fired power stations. A phased approach is needed to reduce reliance on coal entirely.

Natural gas production accounts for 71 percent of commercial energy fuelling power, fertilizer and industrial production, and commercial and domestic consumption, so the focus must be on monitoring the greenhouse gas emissions from gas production and strengthening regulations to prevent methane leaks. Gas provides a significant proportion of energy consumption, and the 2017 Gas Sector Master Plan of Bangladesh, forecasting up to 2041, predicted a significant scale-up. Gas monitoring and control is a critical step at this juncture, which would prevent the cost of importing of coal and LNG into the country. Moreover, there are 27 gas fields in Bangladesh, 20 of which are already in production.

Relying on imported oil products has left Bangladesh vulnerable to volatile oil prices and drains public finances through expensive subsidies. The power and transport sectors are the largest consumers of imported oil, so an holistic approach to reducing this reliance through improved gas consumption, increased production of energy from renewable sources, and modal switches in transport would have significant environmental and economic benefits.

Although agencies and international commitments for the scale-up of renewable energy exist,

there has been insufficient progress under the 7th FYP, the renewable energy targets of which were not met. In 2014 the government established the SREDA to facilitate renewable energy and energy efficiency. In 2021 at the UNFCCC 26th Conference of the Parties (COP), Bangladesh committed to have 40 percent of its energy from renewable sources by 2041. Significant acceleration in the development of solar and wind power will be required to meet that target. The 8th FYP states that renewed effort would be needed to improve the implementation of the renewable-energy policy during the 8th FYP period. This is particularly true for increasing investment in power and energy sources. Its commitments include exploring new technologies to reduce cost and enhance renewable-energy options, providing incentives to Independent power producers (IPPs) to invest in renewable energy production, and providing incentives to households to use renewable energy.

Bangladesh must increase energy efficiency to catch up with developed countries by effectively managing the energy demand in each sector and deploying energy-efficiency technology. Under the 7th FYP, Bangladesh aimed to reach an energy conservation target of 20 percent by 2030; this must be scaled up for the future.

To drive progress in its export-oriented manufacturing sector and to introduce dynamism amongst CMSME's, Bangladesh must tap into international investment in green products

and energy systems, lest it risk falling behind international standards on climate change action. The energy sector contributes 55 percent of Bangladesh's greenhouse gas emissions; as Bangladesh seeks to green its brown industries, its focus must first be on energy development.

Inclusive and Green Transport, Connectivity, and Urban Planning

The 8th FYP has extensive commitments to include conservation, including conservation of protected areas such as the Sundarbans; reforestation; coastal afforestation; and wildlife protection. Moreover, the strategic objectives include climate change mitigation, adaptation potential, and support of forest-dependent communities. The 8th FYP, however, misses the opportunity to use urban afforestation to clean air, improve irrigation, lower urban temperatures, and strengthen resilience. The plan only considers urbanization to prevent its encroachment on protected areas.

The current transport vision appears to prioritize expanding road, water, and railway transport without factoring in environmental considerations. Instead, Bangladesh should focus on expanding clean, accessible public transport on a mass scale. As stated, air pollution kills

approximately 200,000 Bangladeshis annually, yet the transport chapter of the 8th FYP has limited mention of pollution reduction on roads, railways, or waterways—this is not covered in the road or water objectives. In the section on urban areas, while reducing vehicle pollution is part of the urban transport goals, the issue of air pollution is siloed from the main transport strategy. This renders the development of the Dhaka MRT and its Elevated Metro Rail as a minor concern when it could have significant effects.

The housing strategy does not appear to include measures to address greenhouse gas emissions associated with residential buildings and construction activities, which indicates a lack of a comprehensive mitigation plan. Residential buildings represent 18 percent of total global energy-related CO2 emissions. The construction of buildings emits an additional 10 percent of emissions. The urban planning and housing construction sector has an enormous opportunity to reduce emissions through energy efficiency, the use of green materials, and improved design and construction, as well as improving resilience to climate change to create affordable and healthy homes.

Foster New Green Industries and Job Creation

Bangladesh must create 2 million additional jobs under the 8th FYP, providing a considerable opportunity to invest in low-emission, high-job creation sectors. World Bank research has found significant opportunities in Bangladesh for sectors with low-emissions profiles and high productivity, such as education, healthcare, and textiles.²³ The 8th FYP aims to strengthen and invest in the modern services sector—if well-targeted, this could catalyze new green industries and employment that benefits society instead of increasing pollution.

The 8th FYP promotes ecotourism in the forestry and environmental sectors without mainstreaming its development in the services sector. Ecotourism would require government finance, sustainable infrastructure, and adequate training and certification. These initiatives require greater government support and would meet job creation objectives, strengthening the services sector and providing finance for conservation and afforestation projects. The 8th FYP recognizes the good case study provided by eco-tourism in Rwanda, which directed it towards local communities, as an incentive to conservation yet relegated the target to a small clause. Ecotourism

could provide a powerful opportunity for inclusive job creation and rural regeneration while protecting the environment, but it would need considerably more support.

Greening Brown Industries and Supply Chains

Despite considerable opportunities and past success in greening the RMG sector, the growth strategy for the sector in the 8th FYP does not include any green policies. The core focus of industrial-growth acceleration is export-oriented manufacturing, alongside promoting domestic demand. This does not, however, acknowledge that the most significant pressure on the RMG industry is now sustainability; when its primary strategy is to seek the global market, it must incorporate this new pressure. Secondly, promoting domestic demand provides an opportunity to establish Bangladesh as a hub of the circular economy. The 8th FYP notes that the top three eco-friendly and seven of the top 10 garment factories in the world are in Bangladesh and that it must remain competitive, armed with recent technological developments, yet this is an addendum to its overall strategy rather than a key component.

²³ The World Bank. 2021. Bangladesh Post-Covid Recovery: A GRID Approach. Washington, DC: World Bank

Bangladesh has a mono-export basket, and the 8th FYP highlights the need to diversify its export economy yet does not outline its new major strategic industries. There is a considerable opportunity to increase the portion in green exports, particularly if the primary pillars of a green-growth strategy on greening the energy mix and building eco-friendly infrastructure are met.

Adopting Blue Economy Approaches

The 8th FYP references the blue economy but only in terms of fisheries. Bangladesh can harness the blue economy as a key growth engine by exploring pathways for developing shipbuilding, coastal and maritime tourism, mariculture, and coastal and offshore wind generation. The settlement of maritime border disputes with Myanmar and India in 2014, the Government of Bangladesh is in a position to unlock the potential of better access to sea and ocean resources. A World Bank report calculated the ocean economy's contribution to Bangladesh as \$6.2 billion in gross added value in 2015.²⁴ Further, as many as 30 million people

24 Patil, P.G., Virdin, J., Colgan, C.S., Hussain, M.G., Failler, P. and Vegh, T. 2018. *Toward a Blue Economy: A Pathway for Bangladesh's Sustainable Growth*. Washington, DC: World Bank. <http://hdl.handle.net/10986/30014> License: CC BY 3.0 IGO

depend upon the country's ocean economy. Regional cooperation between the Indian Ocean Rim Association (IORA) and the Bay of Bengal economies will be critical to sustaining the blue economy benefits through coordinated and joint marine resources management, foreign direct investment and knowledge exchange on emerging technologies and industries, and enhanced maritime connectivity.

Foster R&D and ICT Innovation for Green Solutions and Technologies

Overall, the 8th FYP fails to acknowledge the role R&D can play as a growth engine and its potential to steer development toward green growth. Implemented correctly, investment and regulations around R&D can foster human capacity development.

The 8th FYP references green technologies, but they are not mainstreamed into 'brown' sectoral strategies. On the surface, the 8th FYP is committed to investing in green technologies. However, although the government statedly remains committed to supporting industries that go green, this language is absent from other sectors. For example, although green technologies are allegedly one of the major investments of

Bangladesh's ICT sector, they are not mentioned under the ICT sector's main objectives. A lack of focus on developing green technologies is a missed opportunity because in 2009 the BB established a refinance scheme for environment-friendly technologies such as solar energy, bio-gas plants, and ETPs. The initial schemes focused on only ten products, which have increased to 50 in renewable energy, energy efficiency, waste management, eco-bricks, and recycling. Currently, 39 banks and 19 financial institutions have signed a participation agreement with the BB to provide finance from this scheme. This is an incredible opportunity to build on the use of green technologies, on which the 8th FYP does not capitalize.

The creation of an enabling environment for the development of green technologies is essential. This should include a mechanism to link academia, industry, and research sectors to create green innovation and technology platforms. The 8th FYP hints at this under the development of green technology for agriculture but could build on it more fully across sectors. This would not merely be for manufacturing, ICT or agriculture, but also within education and finance to build capabilities and access. These overlap heavily with 8th FYP priorities around human development and job creation, making this a significant opportunity.

Smart and Inclusive Natural Resources, and Marine and Land Management

Bangladesh's natural resources are some of its key assets, and the 8th FYP acknowledges they are under threat; reversing the degradation of these natural resources should be a primary objective of the 8th FYP. Currently, natural

resources are subsumed into other areas, while agriculture is a key objective in the 8th FYP. That does not do justice to significance of Bangladesh's natural resources to its population and economy.

Fisheries are an important part of Bangladesh's economy, but making them more resilient, inclusive, sustainable, and productive is not afforded adequate attention. The Department

of Fisheries also provides exit strategies for those unable to continue with traditional fishing models. Bangladesh's fisheries are threatened by over-fishing, urbanization and infrastructure development in inland fisheries, water pollution and destructive fishing practices. This is particularly concerning given how vital this sector is; it contributes 3.5 percent of annual GDP and has been expanding at an average annual rate of 5.3 percent. The government has embraced the blue economy and sustainable growth in its fisheries sector, a positive step towards addressing these concerns, yet it requires greater co-ordination between ministries and

capacity building within them. Moreover, one of the current challenges is weak product quality-control measures, which limit export potential. Strengthening these measures, alongside a blue economy approach, could give Bangladesh access to a market for sustainably sourced fish products. Finally, low-income communities have traditionally relied on fishing for their livelihoods, but as this is increasingly threatened; they must be supported to transition away from their activities.

The focus in agriculture is on diversification, but the 8th FYP does not focus on agriculture as a green-growth engine. Agriculture could

be an important entry point for green growth yet the 8th FYP only acknowledges the sector's key environmental challenges, particularly rising temperatures and salinity levels, reduced soil fertility and depleted ground water, in four of the fifteen strategies it sets out. Addressing the challenges of land degradation and vulnerability to climate change would take a nature-oriented approach to the sector, whilst protecting livelihoods and promoting economic growth.

Resilience and Adaptation to Climate Change

The key needs and priorities for adaptation in Bangladesh are addressed in the NAP, but these strategies are not incorporated into

the 8th FYP, rendering it too weak to meet requirements and unable to reap the benefits of multi-sector adaptation.

Minimal focus is given to climate change forecasting and what is required to improve early warning systems in the face of extreme weather events. Although the 8th FYP explicitly acknowledges that “natural disasters cannot be stopped, but the loss of lives, assets and properties can be reduced significantly through effective and timely activities for preparedness”, the provisions for such activities are weak. The Union Disaster Management Committees and the Upazila Disaster Management Committees do not have the adequate resources, capacity, or strength to tackle the extreme weather events that threaten Bangladesh. The 8th FYP also explicitly notes that disaster risk reduction is a multi-sector endeavor, yet this priority is not mainstreamed throughout the plan.

The agricultural goals of the 8th FYP do little to address the food-security concerns of the NAPs in the face of climate shocks according to the Third National Communication of Bangladesh submitted in 2018 (TNC18). In the 8th FYP, and

as implemented in the National Agricultural Policy (2018), the main food-security concerns are maintaining agricultural growth, ensuring social access to food, ensuring dietary diversity, tackling rapid urbanization, and ensuring food safety. These do not acknowledge the extreme pressures Bangladesh's agricultural sector faces from climate

change. Based on socio-economic projections, geographical location, and likely future hazards, Yohe et al. (2006) concluded that Bangladesh will be extremely vulnerable to climate change under all scenarios. As the TNC18 describes, “although in the last four decades, the agriculture sector has made significant progress in crop production and food insecurity management through agricultural and fiscal interventions in the risk-prone areas, these gains could be threatened with worsening climate change associated with extreme hazards as well as with the intrusion of saline waters in the coastal areas due to sea level rise.” The major reasons for concern that agricultural losses will increase include damage to and loss of water resources, changes to the temporal and spatial distribution of water resources, increases in floods and flooded areas, increases in extreme weather events, and increasing salinity levels in agricultural land. Some of these losses have already been observed. To meet these challenges, Bangladesh must focus on developing climate-friendly food-production technology, strengthen climate-resilient agriculture infrastructure, and strengthen international cooperation on food supplies.

The coordination between the 8th FYP and the BDP 2100 highlights how it is possible to integrate the priorities from one national plan into another. Bangladesh has recently formulated an holistic water management plan for the country’s delta-related sectors, the BDP 2100, which sets out long-term strategies for multi-sectoral coordinated policy for national marine

ecosystem and water resources development. The 8th FYP lays out how critical policy steps must be taken, such as tax reforms and major reforms in city corporations and municipalities, for cost recovery in the urban water supply and for the establishment of effective water user associations in rural areas to implement the BDP 2100.

Disaster risk reduction and response strategies focus on human systems and capacity without addressing natural and physical resilience. The disaster-management policies do not advocate, for example, reforestation and afforestation policies in at-risk areas, flooding and water management systems, the development of disaster-resilient infrastructure, or urban planning. Moreover, there is little mention of international cooperation on disasters, such as sharing meteorological information.

Promote an Inclusive and Resilient Society

Achieving 100 percent energy access will be key to Bangladesh’s goal of achieving middle-income country status and including the poor and vulnerable in that economic growth. Yet, the 8th FYP does not include any quality energy-access targets. Bangladesh is now considered a leading developing country in improving access to energy—only 52 percent of the population

had access to electricity in 2010 but increased to 92 percent by 2020. The IDCOL and other programs have made progress in providing solar-home and micro-grid programs; Bangladesh now has the world’s largest off-grid solar program, increased access from 9 percent in 2016 to 14 percent in 2018.²⁵ This access must, however, be improved through more reliable, affordable, and lower-polluting energy production. Bangladesh should consider improving energy efficiency in low-income houses and increasing energy welfare funding.

One of the 8th FYP’s core objectives is to infuse dynamism in CMSMEs; while some objectives explain how – none are green-oriented. The 8th FYP does intend to introduce an online platform for small-scale loans for the CMSMEs; this could be a pivotal opportunity to green CMSMEs by providing assistance in R&D, expanding government procurement of green goods from CMSMEs, and assisting them in finding export markets for their products.

The 8th FYP highlights the need to strengthen the skill base of the existing youth labour force but misses the opportunity to do so in a way that will build skills and sectors in green jobs. The 8th FYP does focus on youth training in the digital sector, but it must go further, ensuring youth participation in green growth through

²⁵ Ichord, R. 2020. Transforming the power sector in developing countries: Geopolitics, poverty, and climate change in Bangladesh. Washington, DC: Atlantic Council.

education and training in these skill sets and sectors. The 8th FYP spotlighted the Bangladesh Youth Employment Program, funded by the United States Agency for International Development (USAID), which promoted decent jobs and climate-friendly entrepreneurship for rural youth in climate-vulnerable, poverty-stricken areas and recommended that the government review such pilot programs and improve its National Service Program. This would enable the youth to contribute to national sustainable development, one of the core youth targets.

Multiple entry points exist for a community-driven participatory approach to natural-resource management and green-growth engines. The 8th FYP highlights where such examples are possible—such as the Daudkandi Model, a community-based innovative flood-plain poly-aquaculture system, which the 8th FYP recommended expanding. Community management will, however, be a critical feature of all natural-resource programs and policies to ensure their longevity and success; currently, it is only introduced with a clear objective, such as determining and monitoring maximum yields. This reduces its efficacy and ownership of such policies by target communities.

Improved Wellbeing and Health through Cleaner Air and Water

Improved wellbeing and health through cleaner air and water should be a positive externality from many of the preceding policies. Still, the 8th FYP does not integrate these concerns beyond its environmental targets. Although the 8th FYP acknowledges the major problem this poses—the WHO recently ranked Bangladesh as having one of the worst air-pollution rates of 202 countries—and the impacts this has on health, reducing air pollution is not one of the targets in transport, energy or job creation. Similarly, it acknowledges the concerns around water quality caused by pollution in all waterways from industrial discharges, municipal wastes, agrochemicals, salinity intrusion, and arsenic contamination and that the DoE has limited capacity to monitor and enforce its regulations. Its only proposed solutions, however, are increasing the number of wastewater facilities and application of the polluter-pays principle. If both these core concerns were integrated into the brown sectors of the 8th FYP—such as transport, manufacturing, and job creation—there would be less focus on treating the negative impacts of these sectors. Improving the capacity of the DoE to enforce upstream regulation, such as standards of wastewater treatment or types of energy used by industries, would be more efficient and reduce negative externalities.

International Climate Leadership and Economic Partnerships

Bangladesh has been a leader in climate action, particularly amongst lower-middle income and climate-vulnerable countries and could use this platform to represent green growth amongst developing countries. As the Chair of the CVF and the V20, Bangladesh has promoted the interests of climate-vulnerable countries. The Global Centre on Adaptation's South Asia regional office in Dhaka shares best practices and adaptation knowledge with other climate-vulnerable countries. If implemented, green-growth policies focused on job creation, natural resource management, and social inclusion could become powerful case studies for green technologies, value chains, and sustainable natural-resource management that could showcase green growth amongst developing countries.

Annex 4

Summary of Key Recommendations under the Country Environmental Analysis and Alignment with the Proposed Framework for Implementing Green Growth in Bangladesh

Addressing Bangladesh's environmental priorities

Improving air-quality management²⁶

Action	Objective	Policy Direction
<p>Adopt a NCA Program based on diverse policy instruments, including measures for reducing agricultural and waste burning; improving fertilizers and livestock manure management; controlling emissions from industry and the power sector; reducing road and construction dust; modernizing brick kilns; moving from solid fuel use in households for cooking to LPG or electricity.</p> <p>Proposed responsibility MoEFCC, DoE, and other members of the NCAPC. Private sector</p>	<p>1 3</p> <p>Timeline Short to long term</p>	<p>1, 2, 3 9</p>
<p>Set the stage for carbon markets and adopt fiscal instruments to address air pollution, such as the phase-out of energy subsidies and a carbon tax, combined with redistribution measures to the poor.</p> <p>Proposed responsibility MoF, MoPEMR</p>	<p>1</p> <p>Timeline Short to long term</p>	<p>1</p>

²⁶ World Bank. 2023 (forthcoming) Bangladesh Country Economic Analysis Chapters 2, 5, 6, and 7. Washington, DC: World Bank

Addressing Bangladesh's environmental priorities

Improving air-quality management

Action	Objective	Policy Direction
Collaborate with neighbouring countries to address transnational PM _{2.5} pollution.	3	9
Proposed responsibility PMO, MoEFCC	Timeline Short to long term	

Action	Objective	Policy Direction
Further, assess (i) the potential for promoting electric stoves and (ii) price and non-price obstacles and incentives for adopting LPG for cooking.	3	9
Proposed responsibility PMO, MoEFCC	Timeline Short term	

Reducing exposure to lead (Pb)²⁷

Action	Objective	Policy Direction
Undertake representative blood-level lead measurement studies and identify sources of lead exposure to inform further policy formulation.	3	8
Proposed responsibility PMO, MoEFCC	Timeline Short term	

Action	Objective	Policy Direction
Adopt temporary measures to reduce exposure to Pb:(i) supplement iron for children from 6 to 59 months; (ii) replace lead-contaminated cookware made from recycled aluminium; and (iii) rehabilitate abandoned used lead-acid battery (ULAB) recycling sites.	3	8
Proposed responsibility MoHFW, MoLGRDC	Timeline Short to medium term	

27 World Bank. 2023 (forthcoming) Bangladesh Country Economic Analysis Chapters 2 and 5. Washington, DC: World Bank

Addressing Bangladesh's environmental priorities

Improving water, sanitation, and hygiene²⁸

Action	Objective	Policy Direction
<p>Prioritize (i) household point-of-use treatment of drinking water with ceramic filters; (ii) safely managed improved non-shared sanitation for households currently with unimproved sanitation; and (iii) promotion of hand washing with soap targeting caregivers of children under five.</p> <p>Proposed responsibility MoWR, MoLGRDC and MoE</p>	<p>2 3</p> <p>Timeline Short to long term</p>	<p>5 9</p>
<p>Complement these measures with: (i) safely managed improved non-shared sanitation for households currently sharing sanitation with other households and (ii) promotion of hand washing with soap to all household members.</p> <p>Proposed responsibility MoF, MoPEMR</p>	<p>2</p> <p>Timeline Short to medium term</p>	<p>5</p>
<p>Mitigate exposure to arsenic in drinking water through tube wells, ponds with sand filters, and household filtering.</p> <p>Proposed responsibility PMO, MoEFCC</p>	<p>2</p> <p>Timeline Short to medium term</p>	<p>8,9</p>

²⁸ World Bank. 2023 (forthcoming) Bangladesh Country Economic Analysis Chapters 2, 5, 6, and 7. Washington, DC: World Bank

Addressing Bangladesh's environmental priorities		
Improving plastic waste management²⁹		
Action Promote research and development of alternatives to single-use plastics.	Objective 2 3	Policy Direction 4, 6 7, 9
Proposed responsibility MoEFCC, DoE, MoI, private sector	Timeline Short to medium term	
Action Implement the ban on plastic bags and extend its scope to other single-use plastic items.	Objective 2 3	Policy Direction 4, 6 7, 9
Proposed responsibility MoEFCC, DoE, MoI, BSTI	Timeline Short term	
Action Adopt mandatory EPR guidelines for plastic waste collection and recycling.	Objective 2 3	Policy Direction 4, 6 7, 9
Proposed responsibility MoEFCC, DoE	Timeline Short term	
Action Adopt an integrated waste management framework, including waste segregation at the household level, infrastructure development, and behavior-change campaigns.	Objective 2 3	Policy Direction 4, 6 7, 9
Proposed responsibility MoEFCC, DoE, LGIs	Timeline Medium term	

²⁹ World Bank. 2023 (forthcoming) Bangladesh Country Economic Analysis Chapter 8. Washington, DC: World Bank

Addressing Bangladesh's environmental priorities

<p>Action Harmonize plastic-management policies to promote a circular economy.</p> <p>Proposed responsibility MoI</p>	<p>Objective 2 3</p> <p>Timeline Short term</p>	<p>Policy Direction 4, 6 7, 9</p>
<p>Action Implement plastic clean up and recovery schemes to reduce legacy plastic waste and mitigate associated impacts.</p> <p>Proposed responsibility MoEFCC, DoE, LGIs, private sector</p>	<p>Objective 2 3</p> <p>Timeline Medium term</p>	<p>Policy Direction 4, 6 7, 9</p>
<p>Action Establish a monitoring system for implementing the Solid Waste Management Rules 2021 and the targets of the Plastic Action Plan.</p> <p>Proposed responsibility MoEFCC, DoE, LGIs</p>	<p>Objective 2 3</p> <p>Timeline Short term</p>	<p>Policy Direction 4, 6 7, 9</p>

Strengthening environmental governance systems

Setting evidence-based priorities and decision-making³⁰

<p>Action</p> <p>Enhance environmental monitoring and data management capacity, including automated air and water quality monitoring networks, and adequate institutional presence in the field with sufficient and well-trained staff.</p> <p>Proposed responsibility</p> <p>MoEFCC, DoE</p>	<p>Objective</p> <p>1 2 3</p> <p>Timeline</p> <p>Short to medium term</p>	<p>Policy Direction</p> <p>1 5 8</p>
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<p>Action</p> <p>Create a research and development unit at DoE.</p> <p>Proposed responsibility</p> <p>MoPA, MoEFCC</p>	<p>Objective</p> <p>1 2 3</p> <p>Timeline</p> <p>Short term</p>	<p>Policy Direction</p> <p>1 5 8</p>
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<p>Action</p> <p>Implement systematic evaluations of the government's interventions and outcome-oriented indicators to assess the institutional performance of environmental agencies.</p> <p>Proposed responsibility</p> <p>MoP, MoEFCC</p>	<p>Objective</p> <p>1 2 3</p> <p>Timeline</p> <p>Short term</p>	<p>Policy Direction</p> <p>1 5 8</p>
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Diversifying and strengthening environmental policy instruments³¹

<p>Action</p> <p>Adopt economic and market-based instruments, such as pollution charges, deposit-refund schemes, EPR schemes, and final demand interventions.</p> <p>Proposed responsibility</p> <p>MoF, MoEFCC, MoPEMR, MoI</p>	<p>Objective</p> <p>1 2 3</p> <p>Timeline</p> <p>Short to medium term</p>	<p>Policy Direction</p> <p>1, 2 4, 5</p> <p>7, 8, 9</p>
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30 World Bank. 2023 (forthcoming) Bangladesh Country Economic Analysis Chapter 3. Washington, DC: World Bank

31 World Bank. 2023 (forthcoming) Bangladesh Country Economic Analysis Chapters 3, 4, and 10. Washington, DC: World Bank

Strengthening environmental governance systems

Action Adopt litigation-based instruments, including liability legislation.	Objective 1 2 3	Policy Direction 1, 2 4, 5
Proposed responsibility Parliament, MoEFCC	Timeline Short to medium term	7, 8, 9

Action Adopt information-based instruments, such as awareness campaigns and regularly disseminating environmental-quality data and pollution loads.	Objective 1 2 3	Policy Direction 1, 2 4, 5
Proposed responsibility MoEFCC, DoE, Health and MoE	Timeline Short term	7, 8, 9

Action Amend or adopt, as applicable, the Environmental Conservation Act, associated rules and guidelines to (i) modernize and make enforcement activities more efficient, based on the polluters-pay principle; (ii) strengthen the system of environmental approval of projects and their subsequent monitoring; (iii) set the mandates and foundations for further regulations on EPR and PES; (iv) mobilize green financing; (v) improve stakeholder engagement in environmental decision-making; (vi) require Strategic Environmental Assessment for policies, plans and programs, among other themes.	Objective 1 2 3	Policy Direction 1, 2 4, 5
Proposed responsibility MoEFCC and Parliament	Timeline Short term	7, 8, 9

Action Conduct an in-depth, independent evaluation of the effectiveness and efficiency of the environmental-clearance system.	Objective 1 2 3	Policy Direction 1, 2 4, 5
Proposed responsibility MoEFCC	Timeline Short term	7, 8, 9

Strengthening environmental governance systems

<p>Action</p> <p>Revise the EIA Guidelines for Industry 2021, update and expand their contents per the ECR 2023, and develop guidelines for non-industry projects.</p> <p>Proposed responsibility</p> <p>MoEFCC</p>	<p>Objective</p> <p>1 2 3</p> <p>Timeline</p> <p>Short term</p>	<p>Policy Direction</p> <p>1, 2 4, 5</p> <p>7, 8, 9</p>
<h3>Strengthening organizational structure and institutional capacity³²</h3>		
<p>Action</p> <p>Analyze the organizational structure under MoEFCC and affiliated agencies to set clearer mandates and more efficient processes for environmental governance, including inter-agency coordination.</p> <p>Proposed responsibility</p> <p>MoEFCC</p>	<p>Objective</p> <p>1</p> <p>Timeline</p> <p>Short term</p>	<p>Policy Direction</p> <p>1</p>
<p>Action</p> <p>Increase DoE's budget and headcount.</p> <p>Proposed responsibility</p> <p>MoF, MoP, MoPA, MoEFCC</p>	<p>Objective</p> <p>1</p> <p>Timeline</p> <p>Short term</p>	<p>Policy Direction</p> <p>1</p>
<p>Action</p> <p>Establish a cadre of environmental specialists for DoE.</p> <p>Proposed responsibility</p> <p>MoPA, BCS</p>	<p>Objective</p> <p>1</p> <p>Timeline</p> <p>Short term</p>	<p>Policy Direction</p> <p>1</p>

32 World Bank. 2023 (forthcoming) Bangladesh Country Economic Analysis Chapters 3 and 4. Washington, DC: World Bank













Strengthening environmental governance systems

<p>Action</p> <p>Implement a comprehensive information-management system with automated monitoring for compliance, enforcement, and policy formulation.</p> <p>Proposed responsibility</p> <p>MoEFCC, DoE</p>	<p>Objective</p> <p>1</p> <p>Timeline</p> <p>Medium term</p>	<p>Policy Direction</p> <p>1</p>
<h2>Strengthening environmental justice and citizen-driven accountability³³</h2>		
<p>Action</p> <p>Regularly disclose data supporting key environmental indicators (including pollution loads and environmental health statistics), use public forums for air development initiatives, and conduct broader and more detailed reviews and discussions of environmental management tools.</p> <p>Proposed responsibility</p> <p>MoEFCC, DoE</p>	<p>Objective</p> <p>1</p> <p>Timeline</p> <p>Short term</p>	<p>Policy Direction</p> <p>1</p>
<p>Action</p> <p>Proceed with a comprehensive reform of the Environment Court Act, expanding legal standing to all citizens and creating the roles of environmental prosecutors and technical experts.</p> <p>Proposed responsibility</p> <p>Parliament, MoEFCC</p>	<p>Objective</p> <p>1</p> <p>Timeline</p> <p>Short term</p>	<p>Policy Direction</p> <p>1</p>
<p>Action</p> <p>Adopt rules and guidelines for applying the polluter-pays principle effectively, including criteria for setting the value of fines, precautionary measures, and more severe penalties.</p> <p>Proposed responsibility</p> <p>MoEFCC, DoE</p>	<p>Objective</p> <p>1</p> <p>Timeline</p> <p>Short term</p>	<p>Policy Direction</p> <p>1</p>

33 World Bank. 2023 (forthcoming) Bangladesh Country Economic Analysis Chapters 3, 4, and 10. Washington, DC: World Bank

Strengthening environmental governance systems

Building an enabling environment for green financing³⁴

<p>Action Adopt a broad-based national green-growth action plan backed by a commensurate set of regulatory and institutional frameworks.</p> <p>Proposed responsibility MoF, BB, BIDA, MoI, MoEFCC</p>	<p>Objective  Timeline Short term</p>	<p>Policy Direction  </p>
<p>Action Create an ecosystem of ministries and government agencies that collect and analyze point-source data to enforce policies and create a pipeline of verified investment-ready projects.</p> <p>Proposed responsibility MoEFCC, BB</p>	<p>Objective  Timeline Short term</p>	<p>Policy Direction  </p>
<p>Action Adopt incentives to boost environmental markets, such as promotion of (i) green practices, green businesses, and investments with positive environmental externalities; (ii) incentives to address the risks faced by financial institutions or perceived by financiers; and (iii) a collaborative institutional system to implement green financial incentives.</p> <p>Proposed responsibility MoF, BB, MoEFCC, Private sector</p>	<p>Objective  Timeline Short to medium term</p>	<p>Policy Direction  </p>
<p>Action Strengthen institutional and borrower capabilities by building skills and expertise on green financing across sectors.</p> <p>Proposed responsibility BB, MoEFCC, Private sector</p>	<p>Objective  Timeline Short to medium term</p>	<p>Policy Direction  </p>

34 World Bank. 2023 (forthcoming) Bangladesh Country Economic Analysis Chapter 9. Washington, DC: World Bank

Annex 5

List of Referenced World Bank Analytical Products

The following World Bank analytical products were referenced in the preparation of this analytical document.

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